2017

Sunflower & Flax Hybrid Performance and Variety Trial Archive

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Sunflower

2003 South Dakota Hybrid Performance Trials

Oilseed
Confection

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List of Tables

COOPERATIVE EXTENSION SERVICE SDSU

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Sunflower

2003 South Dakota Hybrid Performance Trials
Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that a hybrid may or may not be the best yielder at all locations but that it ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical way to indicate if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Miller oilseed test (Table 4) could be repeated in 2004 exactly as it was in 2003, the yield ranking of a hybrid that yielded 2420 lb/A and one that yielded 2049 lb/A might change places since their yield difference (371 lb/A) is less than the indicated yield LSD value of 411 lb/A. Within the accuracy level of the equipment used, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Miller in 2003.

In contrast, a hybrid that yielded 1970 lb/A at Miller in 2003 would likely be lower yielding than one that yielded 2420 lb/A if the two hybrids were grown again under similar conditions, because the difference between them in 2003 (2420 – 1970 = 450 lb/A) exceeded the LSD value (411 lb/A).

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates.

Trials with C.V. rates below 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding hybrids, select the one with the highest oil content. The oilseed market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional," high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun oleic levels. Consistency of oleic levels for particular hybrids will be an important trait to evaluate, as data become available.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced

when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs.

To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflowers at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease control is the planting of resistant or tolerant hybrids and a minimum of 4 years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and two or more races of rust. Consult the seed company for information on the reaction of a particular hybrid to these and other diseases that may pose a risk in your growing area.

2003 Trials

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Miller, the Dakota Lakes Research Station near Pierre, Ipswich, and Pukwana). Entries in the oilseed sunflower trials included traditional oil hybrids and NuSun (mid-oleic) hybrids. Non-oilseed (confection) sunflower trials were conducted at Dakota Lakes, Miller, and Pukwana. Trial sites are indicated on the map in Figure 1. Lists of hybrids planted at each site appear in Tables 2 and 7.

Also included in this publication are the results of the National Sunflower Association (NSA) NuSun and confection hybrid sunflower trials conducted at Onida and Selby (Tables 11-14). These trials were planted and harvested by Custom Crop Services, Ellendale, N.D. SDSU personnel took notes on the plots during the growing season.

Climatic Conditions

The 2003 growing season was generally dry. At the end of May (when the sunflower test sites were planted), approximately 25% of the state was short to very short in topsoil moisture and 35% was short or very short in subsoil moisture, respectively (South Dakota Ag Statistics Service). A summary of 2003 climatic conditions near the sunflower test sites is presented in Table 1. All stations received below-normal precipitation for most of the growing season. Temperatures were below normal in May and June but above normal in July and August. Most of the state received a killing frost during the first week of October.

Experimental Methods

Plots at all locations consisted of four rows 24 feet long, spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

All plots were overseeded and thinned. Oilseed plots at Miller, Ipswich, and Pukwana were thinned to a plant population of approximately 18,000 plants/acre. Oilseed plots at Dakota Lakes were thinned to approximately 17,000 plants/acre. Confection plots at all locations were thinned to 16,000 plants/acre. Stands were fair to good at all locations except the fourth replication at Ipswich, where compacted soil resulted in poor stand establishment. Data from this replication were excluded from all statistical analyses.

The Dakota Lakes trial was seeded no-till. All other trials were planted with conventional tillage practices. Spartan and Prowl herbicides were applied for weed control at Dakota Lakes. Sonalan or Treflan was applied at all other locations.

Flowering was recorded at Miller as the number of days from planting to 50% ray petals extended. Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was severe in the oilseed trial at Pukwana, resulting in a high C.V. for yield data, which are therefore not reported. Plots at Dakota Lakes were excessively damaged by drought and birds and were not harvested.

Plots were harvested with a Gleaner Model K combine fitted with a two-row all row crop header. All oilseed trial seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis of oven-dry samples and converted to 10% moisture. Oil values for NuSun hybrids were adjusted for oleic acid content.

Seed from the non-oilseed trials was dried before weighing. A one-pint subsample of seed from each plot was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 3-6 (oilseed) and 8-10 (confection). The yield of 51 oilseed hybrids grown at Ipswich averaged 2074 lb/A. Fifty-one hybrids grown at Miller averaged 1878 lb/A. Yields from the Pukwana oilseed trial are not reported because the C.V. was too high for reliable hybrid comparisons. Confection seed yields averaged 1639 lb/A at Miller and 1761 lb/A at Pukwana. In the tables that follow, hybrids are listed according to 2003 seed yields.

Results from the NSA NuSun and confection trials are presented in Tables 11-14. Average yield over all hybrids at Onida was 1745 lb/A in the NuSun trial (Table 11) and 2020 lb/A in the confection trial (Table 13). Oilseed hybrids at Selby averaged 1451 lb/A seed yield (Table 12), while confection hybrids averaged 1676 lb/A (Table 14).

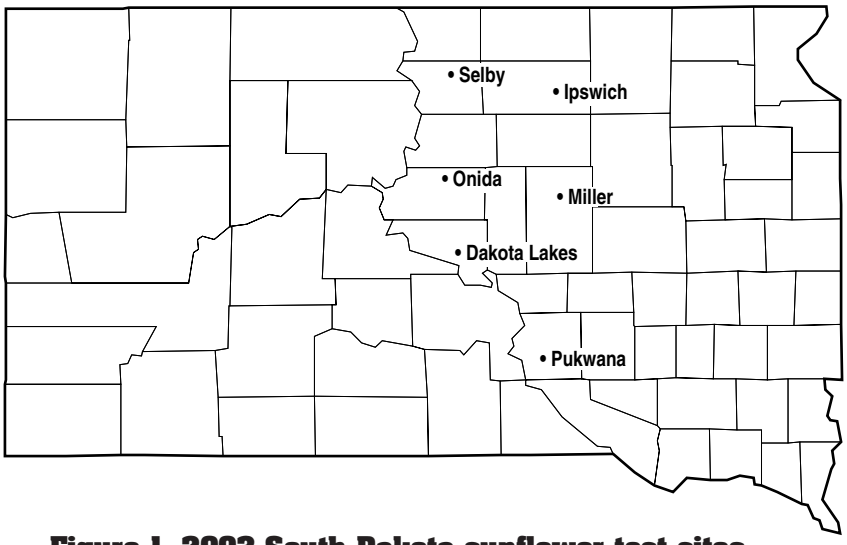

Figure I. 2003 South Dakota sunflower test sites.

Table 1. Climate summary for nearest weather stations to 2003 South Dakota sunflower test sites and departures from normal.

LOCATION-MONTH	2003 TEMPERATURE			TOTAL PRECIP	DEPARTURE FROM NORMAL^			
	AVG MAX.	AVG MIN.	MEAN	IN.	MAX TEMP	MIN TEMP	AVG TEMP	PRECIP IN.
	°F				°F			
Pierre*								
May	68.4	44.4	56.8	2.19	-3.0	-1.9	-2.1	-0.95
June	78.1	51.9	66.3	4.27	-3.3	-4.0	-2.4	0.78
July	90.0	59.8	75.7	1.18	0.8	-2.0	0.2	-1.57
August	90.9	61.3	76.4	0.35	2.9	1.2	2.3	-1.51
September	77.4	44.8	62.3	1.09	-0.1	-4.3	-0.9	-0.46
Academy 2NE (Pukwana)*								
May	67.9	43.6	55.8	3.32	-1.7	-1.9	-1.8	-0.46
June	78.2	52.9	65.6	3.45	-1.4	-2.3	-1.8	0.11
July	89.5	59.5	74.5	1.94	3.3	-1.2	1.0	-1.03
August	90.4	60.0	75.2	3.48	5.7	1.9	3.8	1.31
September	78.9	45.7	62.3	0.58	3.2	-1.9	0.6	-1.66
Ipswich*								
May	66.4	43.3	54.8	5.41	-3.4	2.0	-0.8	2.71
June	74.7	53.8	64.2	4.02	-3.8	2.7	-0.6	0.58
July	84.0	58.5	71.2	2.06	-0.7	2.4	0.8	-0.96
August	85.5	57.8	71.7	1.20	2.5	4.2	3.4	-1.02
September	72.8	44.2	58.5	0.90	-0.2	1.2	0.5	-0.74
Miller*								
May	67.7	44.8	56.3	2.26	-0.7	-0.7	-0.7	-0.88
June	76.7	53.8	65.2	3.32	-1.5	-1.5	-1.6	0.42
July	87.3	60.5	73.9	2.24	2.2	-0.1	1.0	-0.36
August	88.2	60.6	74.4	1.71	4.5	2.8	3.6	-0.30
September	75.3	45.9	60.6	1.21	1.2	-1.6	-0.2	-0.59
Onida 4 NW*								
May	67.0	43.7	55.4	4.47	-3.4	-0.6	-2.0	1.62
June	77.5	53.0	65.3	3.19	-2.7	-0.6	-1.6	0.08
July	89.7	59.3	74.5	2.68	2.1	0.5	1.3	-0.01
August	91.4	60.6	76.0	0.65	5.6	3.6	4.6	-1.49
September	77.4	45.3	61.4	1.34	1.4	-1.0	0.2	-0.20
Selby*								
May	65.4	43.6	54.5	3.07	-2.8	-0.3	-1.6	0.52
June	74.2	53.2	63.7	2.25	-3.1	-0.3	-1.7	-0.78
July	87.2	59.1	73.1	1.07	3.4	0.6	1.9	-1.47
August	88.8	60.0	74.4	0.57	6.1	3.5	4.8	-1.57
September	73.8	45.8	59.8	1.04	1.8	0.6	1.2	-0.26

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2003 observations to 30-yr averages for each site.

Table 2. Hybrids and test sites for the 2003 South Dakota oilseed hybrid sunflower trials.

Sunflower Brand-Hybrid	Hybrid Type	Ipswich	Miller	Dakota* Lakes	Pukwana
Croplan CL308	NuSun	X	X		
Croplan CL345	NuSun	X	X		X
Croplan CL380	NuSun				X
Croplan CL385	NuSun	X	X		X
Croplan CL821	Trad.	X	X		
Dekalb DK3868	Trad.	X	X	X	X
Dekalb DK3875	Trad.	X	X	X	X
Dekalb DKF30-33NS	NuSun	X	X	X	X
Dekalb DKF33-33NS	NuSun	X	X	X	X
Dekalb EXP38-30NS	NuSun	X	X	X	X
Dekalb EXP3880CL	Trad.	X	X	X	X
Fontanelle 902 NS	NuSun			X	X
Interstate F10355	Trad.	X	X	X	
Interstate Hysun 450	NuSun	X	X	X	X
Interstate Hysun 521	NuSun	X	X	X	X
Interstate IS 4049	Trad.	X	X	X	X
Interstate IS 6039	Trad.	X	X	X	X
Interstate IS 6767	Trad.	X	X	X	X
Kaystar 2015NS	NuSun	X			
Kaystar 2020NS	NuSun		X	X	X
Kaystar 8303	Trad.	X			
Kaystar 8330NS	NuSun	X			
Kaystar X3002	Trad.		X	X	X
Kaystar 9411	Trad.	X	X		
Kaystar 9501	Trad.		X	X	X
Legend LSF117N	NuSun	X	X	X	X
Legend LSF119N	NuSun	X	X	X	X
Legend LSF126N	NuSun	X	X	X	X
Legend LSF142N	NuSun	X	X	X	X
Legend LX02	NuSun	X	X	X	X
Mycogen 8377NS	NuSun	X	X	X	X
Mycogen 8488NS	NuSun	X	X	X	X
Mycogen 8N327	NuSun	X	X	X	X
Mycogen 8N421	NuSun	X	X	X	X
Mycogen Cavalry	Trad.	X	X	X	X
Mycogen SF187	Trad.	X	X	X	X
Mycogen SF260	Trad.	X	X	X	X
Mycogen X89910	NuSun	X	X	X	X
Pioneer hybrid 63M52	NuSun	X	X	X	X
Pioneer hybrid 63M80	NuSun	X	X	X	X
Pioneer hybrid 63M91	NuSun	X	X	X	X
Pioneer hybrid EXP0301	NuSun	X	X	X	X
Pioneer hybrid EXP0302	NuSun	X	X	X	X
Proseed 9405	NuSun	X	X	X	X
Proseed 9441	NuSun	X	X	X	X
Proseed CL 55-15	NuSun	X	X	X	X
Proseed Ex 12	NuSun	X	X	X	X
Proseed Ex 14	NuSun	X	X	X	X
Proseed Ex 15	NuSun	X	X	X	X
Proseed Ex 39	NuSun	X	X	X	X
Seeds 2000 Blazer	NuSun	X	X		X
Seeds 2000 Bronco	NuSun		X		
Seeds 2000 Charger	NuSun	X	X		X
Seeds 2000 Ranger	NuSun	X	X		
Triumph 636	NuSun				X
Triumph 645	NuSun				X
Triumph 658	NuSun				X
Triumph 667	NuSun	X	X	X	X
USDA 894 (check)	Trad.	X	X	X	X
cmsHA406/RHA373(chk)	Trad.	X		X	X
Total Hybrids		51	51	44	51

* Plots at Dakota Lakes were not harvested due to excessive drought and bird damage.

Table 3. Oilseed sunflower hybrid yield trial, Ipswich, S.D., 2003.

Sunflower		Seed Yield (lbs/A)				Plant	Harv.	Test		Final
Brand-Hybrid	Type	2003	2002	2-yr	Oil	Hght	Moist.	Wght	Lodg	Pop.
					%	in.	%	lbs/bu	%	Plnt/A
Croplan CL821	Trad.	2617	--	--	40.3	66	13.6	27.2	3	17900
Interstate F10355	Trad.	2546	--	--	41.1	67	15.6	29.1	3	16300
Mycogen X89910	NuSun	2537	--	--	37.6	66	11.1	29.2	0	18200
Proseed 9441	NuSun	2532	--	--	40.0	71	11.4	30.2	2	17600
Dekalb DKF33-33NS	NuSun	2453	1700	2077	38.1	61	13.9	29.1	3	17900
Croplan CL308	NuSun	2439	1711	2075	40.6	63	9.9	28.6	5	17600
Pioneer hybrid EXP0302	NuSun	2402	--	--	38.2	67	12.5	28.0	2	18200
Dekalb EXP3880CL	Trad.	2399	--	--	39.7	61	11.1	28.8	1	18200
Croplan CL385	NuSun	2396	1785	2091	39.5	60	14.5	28.6	2	16100
Dekalb DK3875	Trad.	2394	1998	2196	39.0	62	13.0	29.3	5	17300
Mycogen 8N421	NuSun	2334	1809	2072	40.5	68	11.8	28.4	6	17600
Croplan CL345	NuSun	2332	1818	2075	40.7	67	13.5	29.4	0	17600
Kaystar 8330NS	NuSun	2331	--	--	38.1	65	13.3	28.6	3	17600
Seeds 2000 Ranger	NuSun	2320	1176	1748	38.3	64	12.1	29.3	3	17900
Mycogen 8377NS	NuSun	2278	1781	2029	40.8	67	11.3	29.0	5	17300
Interstate IS 4049	Trad.	2257	1544	1900	40.4	72	12.5	28.6	4	17600
Dekalb DKF30-33NS	NuSun	2238	--	--	38.6	66	13.9	29.2	5	17900
Pioneer hybrid 63M80	NuSun	2224	1503	1863	40.3	64	12.0	28.5	2	16300
Legend LSF126N	NuSun	2212	--	--	38.3	65	11.3	29.0	5	17900
Proseed Ex 14	NuSun	2177	--	--	40.5	67	12.9	28.2	8	18200
Seeds 2000 Blazer	NuSun	2164	1696	1930	38.6	58	11.2	28.0	9	18200
Legend LSF142N	NuSun	2156	2018	2087	39.0	66	12.7	29.6	2	17700
Pioneer hybrid 63M52	NuSun	2144	1453	1799	39.0	65	11.8	27.9	8	17600
Proseed Ex 12	NuSun	2132	--	--	41.1	69	13.2	27.8	8	18200
Kaystar 9411	Trad.	2129	--	--	40.1	68	11.5	29.0	5	17700
Triumph 667	NuSun	2122	--	--	40.5	52	17.4	29.2	6	18200
Mycogen Cavalry	Trad.	2056	--	--	41.6	73	12.6	30.0	3	17900
Dekalb EXP38-30NS	NuSun	2053	--	--	40.3	66	14.2	30.1	2	18200
Mycogen 8N327	NuSun	2041	1559	1800	41.1	66	11.8	29.1	3	17600
Mycogen 8488NS	NuSun	2004	1574	1789	39.6	67	12.0	29.5	4	17600
Dekalb DK3868	Trad.	1971	1465	1718	40.5	65	13.0	30.0	9	16900
Interstate Hysun 521	NuSun	1937	1679	1808	38.0	62	13.9	28.7	4	17600
Pioneer hybrid EXP0301	NuSun	1929	--	--	39.5	61	12.2	28.1	4	17600
Legend LSF117N	NuSun	1926	--	--	37.8	60	12.4	28.5	3	18200
Proseed Ex 39	NuSun	1925	--	--	40.7	56	11.1	27.3	11	18200
Proseed CL 55-15	NuSun	1915	--	--	39.3	67	10.8	28.2	4	17900
Mycogen SF187	Trad.	1879	--	--	38.5	63	12.0	28.2	6	18200
Interstate IS 6039	Trad.	1877	1489	1683	40.5	65	12.1	29.1	9	18200
Proseed 9405	NuSun	1865	1836	1850	40.0	58	14.3	27.6	2	17300
Kaystar 2015NS	NuSun	1836	--	--	38.3	59	11.5	28.3	0	17900
Kaystar 8303	Trad.	1833	--	--	41.7	63	12.0	28.3	9	17900
Legend LSF119N	NuSun	1803	--	--	38.3	66	12.0	27.9	4	18200
Legend LX02	NuSun	1790	--	--	39.0	70	12.4	28.4	4	15200
Pioneer hybrid 63M91	NuSun	1747	1606	1677	40.2	72	10.7	29.3	10	18200
cmsHA406/RHA373(chk)	Trad.	1706	--	--	40.5	71	12.7	29.6	7	18200
Interstate IS 6767	Trad.	1682	1249	1466	40.4	65	10.8	30.7	10	18200
Interstate Hysun 450	NuSun	1630	1982	1806	38.6	63	14.3	28.1	0	17600
Mycogen SF260	Trad.	1587	1733	1660	40.1	63	12.0	27.9	4	17900
USDA 894 (check)	Trad.	1555	1276	1415	40.8	69	10.3	28.2	19	18200
Proseed Ex 15	NuSun	1501	--	--	40.3	69	11.8	28.0	11	17600
Seeds 2000 Charger	NuSun	1466	--	--	38.8	70	15.0	28.8	5	18200
Grand Mean		2074	1609	1841	39.7	65	12.5	28.7	5	17700
LSD 5%		592	346		1.6	5	2.6	1.7	5	ns
C.V.		17.6	15.4		2.4	4.6	12.8	3.6	67.6	5.1

Planted May 28, 2003. Harvested October 2, 2003.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Mark Volk, Ipswich, SD.

Table 4. Oilseed sunflower hybrid yield trial, Miller, S.D,. 2003.

Sunflower		Seed Yield (lbs/A)				Days to	Plant	Harv.	Test		Final
Brand-Hybrid	Type	2003	2002	2-yr	Oil	Flower	Hght	Moist.	Wght	Lodg	Pop.
					%		in.	%	lbs/bu	%	Plnt/A
Dekalb DK3875	Trad.	2420	1100	1760	39.2	71	64	12.9	27.5	4	18200
Mycogen SF260	Trad.	2251	1121	1686	40.3	70	61	10.4	26.9	4	18200
Proseed 9441	NuSun	2229	--	--	39.0	72	67	11.8	27.0	7	18200
Pioneer hybrid 63M80	NuSun	2213	1199	1706	39.8	69	62	12.3	27.7	10	18200
Kaystar X3002	Trad.	2173	--	--	38.6	72	67	15.0	27.6	11	18200
Kaystar 9501	Trad.	2115	1871	1993	38.8	73	69	13.6	28.9	7	18200
Kaystar 9411	Trad.	2097	--	--	40.3	69	63	12.4	28.0	9	17100
Mycogen SF187	Trad.	2052	1606	1829	37.7	70	62	8.7	26.4	6	18200
Mycogen 8377NS	NuSun	2049	1509	1779	39.4	68	64	11.6	27.8	8	18200
Mycogen 8N421	NuSun	2049	1099	1574	39.2	70	64	11.5	25.6	9	18200
Mycogen Cavalry	Trad.	2049	--	--	41.0	73	68	14.4	28.1	9	18200
Legend LSF142N	NuSun	2037	1750	1893	38.1	73	63	10.9	26.7	6	18200
Interstate Hysun 450	NuSun	1983	1695	1839	40.6	74	63	14.6	27.5	5	18200
Interstate IS 6039	Trad.	1976	705	1341	41.1	67	64	10.6	27.7	18	18200
Dekalb DK3868	Trad.	1970	1240	1605	40.8	69	60	13.6	26.6	4	18200
Seeds 2000 Bronco	NuSun	1961	1353	1657	41.5	73	63	15.4	27.2	5	18200
Seeds 2000 Charger	NuSun	1956	--	--	38.7	70	64	14.1	27.3	11	18200
Croplan CL821	Trad.	1940	--	--	39.2	70	65	12.3	25.0	10	18200
Legend LSF117N	NuSun	1939	--	--	38.7	67	61	13.0	26.7	4	18200
Interstate Hysun 521	NuSun	1932	1447	1690	38.6	67	62	12.7	27.6	11	18200
Interstate IS 6767	Trad.	1928	1098	1513	41.3	68	63	13.2	27.7	10	18200
Mycogen 8N327	NuSun	1927	1877	1902	40.4	68	63	11.3	26.8	12	18200
Legend LSF126N	NuSun	1915	954	1435	37.8	71	64	13.8	26.8	6	18200
Triumph 667	NuSun	1903	--	--	41.6	73	49	15.4	27.8	3	18200
Pioneer hybrid 63M91	NuSun	1893	918	1405	39.0	69	64	10.9	28.0	9	18200
Proseed Ex 14	NuSun	1857	--	--	38.6	71	65	11.4	25.9	11	18200
Pioneer hybrid EXP0302	NuSun	1835	--	--	37.9	70	65	12.6	26.6	9	18200
Pioneer hybrid 63M52	NuSun	1831	875	1353	38.5	69	63	13.8	26.8	12	18200
Proseed 9405	NuSun	1819	1344	1581	39.8	70	64	16.8	26.6	3	18200
Mycogen X89910	NuSun	1817	--	--	38.2	68	62	13.9	25.7	9	18200
Croplan CL345	NuSun	1815	1533	1674	38.8	68	64	11.9	26.7	12	18200
Dekalb EXP38-30NS	NuSun	1812	--	--	38.5	72	65	13.2	26.6	4	17600
Interstate IS 4049	Trad.	1812	1297	1555	40.0	71	64	12.3	25.2	11	18200
Proseed Ex 39	NuSun	1807	--	--	39.9	69	59	11.3	25.6	11	18200
Legend LSF119N	NuSun	1796	--	--	38.8	69	63	13.2	27.0	15	18200
Dekalb EXP3880CL	Trad.	1794	--	--	39.3	70	59	11.3	26.5	7	18200
Seeds 2000 Ranger	NuSun	1772	1383	1577	39.8	68	59	12.0	26.1	16	18200
Pioneer hybrid EXP0301	NuSun	1761	--	--	39.1	69	61	12.5	25.7	16	18200
Seeds 2000 Blazer	NuSun	1745	1213	1479	39.7	71	60	13.1	25.7	1	18200
Croplan CL308	NuSun	1736	1324	1530	40.4	69	63	11.4	26.7	13	18200
Dekalb DKF30-33NS	NuSun	1725	--	--	39.4	68	63	11.7	27.0	0	18200
Dekalb DKF33-33NS	NuSun	1717	1573	1645	39.0	67	62	11.6	26.7	11	18200
Kaystar 2020NS	NuSun	1715	1575	1645	40.8	74	61	14.4	27.9	7	18200
Croplan CL385	NuSun	1676	1319	1498	38.9	73	61	14.7	27.0	14	18200
Interstate F10355	Trad.	1648	--	--	40.0	72	64	12.8	26.6	8	18200
Legend LX02	NuSun	1636	--	--	39.3	73	65	12.9	26.7	16	18200
Mycogen 8488NS	NuSun	1617	1290	1454	39.6	70	63	14.0	26.5	4	18200
Proseed Ex 12	NuSun	1588	--	--	40.1	71	67	13.2	26.9	23	18200
Proseed Ex 15	NuSun	1563	--	--	39.6	68	65	10.5	26.2	22	18200
Proseed CL 55-15	NuSun	1562	--	--	37.5	71	62	10.6	26.4	8	18200
USDA 894 (check)	Trad.	1387	1099	1243	39.4	69	64	11.7	25.5	34	18200
Grand Mean		1878	1285	1582	39.4	70	63	12.7	26.8	10	18200
LSD 5%		411	392		1.8	1	3	3.1	1.4	8	ns
C.V.		15.7	18.8		3.2	1.2	3.2	17.5	3.8	55.5	2.0

Planted May 29, 2003. Harvested September 25, 2003.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Kelvin Grey, St. Lawrence, SD.

Table 5. Oilseed sunflower hybrid yield trial, Pukwana, S.D., 2003.

Sunflower		Seed Yield			Plant	Harv.	Test		Final
Brand-Hybrid	Type	2003*	2002	Oil	Hght	Moist.	Wght	Lodg	Pop.
		lbs/A		%	in.	%	lbs/bu	%	Plnt/A
Croplan CL345	NuSun	--	--	41.8	56	14.0	30.7	39	18200
Croplan CL380	NuSun	--	1047	42.6	55	18.2	30.7	33	18200
Croplan CL385	NuSun	--	1523	41.2	51	13.7	30.7	22	18200
Dekalb DK3868	Trad.	--	878	43.5	49	12.3	29.0	46	17100
Dekalb DK3875	Trad.	--	1724	42.5	53	10.8	32.0	32	18200
Dekalb DKF30-33NS	NuSun	--	--	40.2	55	14.5	30.4	28	18200
Dekalb DKF33-33NS	NuSun	--	981	39.6	52	14.8	26.1	28	18200
Dekalb EXP38-30NS	NuSun	--	--	41.7	57	15.0	31.4	22	18200
Dekalb EXP3880CL	Trad.	--	--	41.6	47	12.7	26.2	40	18200
Fontanelle 902 NS	NuSun	--	--	42.2	54	19.6	28.2	41	18200
Interstate Hysun 450	NuSun	--	1259	41.8	52	13.8	29.9	25	18200
Interstate Hysun 521	NuSun	--	1072	39.6	50	14.9	31.7	29	17300
Interstate IS 4049	Trad.	--	1058	41.8	58	14.7	27.5	39	18200
Interstate IS 6039	Trad.	--	804	42.7	53	11.2	25.1	59	18200
Interstate IS 6767	Trad.	--	888	43.1	53	16.7	28.7	32	16700
Kaystar 2020NS	NuSun	--	--	41.6	52	14.0	31.0	26	17700
Kaystar X3002	Trad.	--	--	41.7	62	17.9	34.6	28	18200
Kaystar 9501	Trad.	--	1065	41.8	62	17.2	29.0	32	18200
Legend LSF117N	NuSun	--	--	40.9	52	13.7	32.1	30	18200
Legend LSF119N	NuSun	--	--	39.8	57	14.5	28.1	39	17300
Legend LSF126N	NuSun	--	--	40.3	52	14.4	29.1	43	18200
Legend LSF142N	NuSun	--	1052	41.8	51	15.0	31.3	28	18200
Legend LX02	NuSun	--	--	41.5	54	12.6	30.1	44	18200
Mycogen 8377NS	NuSun	--	--	42.0	58	13.4	30.3	17	18200
Mycogen 8488NS	NuSun	--	1353	41.3	59	14.9	28.3	41	18200
Mycogen 8N327	NuSun	--	1049	42.5	54	12.4	28.0	42	18200
Mycogen 8N421	NuSun	--	1948	41.5	57	14.6	29.5	21	18200
Mycogen Cavalry	Trad.	--	1199	42.5	61	16.4	30.7	12	18200
Mycogen SF187	Trad.	--	1824	42.3	49	13.5	30.8	24	18200
Mycogen SF260	Trad.	--	1228	41.1	49	11.8	34.4	15	18200
Mycogen X89910	NuSun	--	--	40.2	56	14.9	29.7	24	18200
Pioneer hybrid 63M52	NuSun	--	983	40.4	52	15.9	29.4	49	18200
Pioneer hybrid 63M80	NuSun	--	889	43.3	56	15.9	27.5	41	18200
Pioneer hybrid 63M91	NuSun	--	825	42.5	59	13.2	26.3	32	14500
Pioneer hybrid EXP0301	NuSun	--	--	41.4	52	11.7	29.8	42	18200
Pioneer hybrid EXP0302	NuSun	--	--	40.0	54	15.3	28.0	32	18200
Proseed 9405	NuSun	--	912	40.9	55	17.9	29.3	30	18200
Proseed 9441	NuSun	--	--	42.3	59	13.3	29.1	35	18200
Proseed CL 55-15	NuSun	--	--	40.5	51	13.3	29.1	42	18200
Proseed Ex 12	NuSun	--	--	42.0	55	15.2	31.2	50	18200
Proseed Ex 14	NuSun	--	--	41.5	56	13.5	31.7	45	18200
Proseed Ex 15	NuSun	--	--	42.7	57	16.4	25.8	49	18200
Proseed Ex 39	NuSun	--	--	42.3	49	11.8	29.9	35	16700
Seeds 2000 Blazer	NuSun	--	938	41.8	49	15.0	32.9	30	18200
Seeds 2000 Charger	NuSun	--	--	41.3	57	15.5	24.3	31	18200
Triumph 636	NuSun	--	--	41.5	56	19.2	28.1	40	18200
Triumph 645	NuSun	--	--	41.2	57	18.6	28.6	37	18200
Triumph 658	NuSun	--	1348	43.0	55	16.3	26.3	36	18200
Triumph 667	NuSun	--	--	41.6	50	17.3	29.3	23	17000
USDA 894 (check)	Trad.	--	695	42.8	56	15.6	31.7	33	17700
cmsHA406/RHA373(chk)	Trad.	--	--	43.9	55	11.1	28.6	46	18200
Grand Mean			1095	41.7	54	14.7	29.5	34	18000
LSD 5%			331	1.7	5	3.7	3.6	16	ns
C.V.			18.6	2.9	6.3	17.9	8.7	33.1	6.1

* High C.V. 2003 yield results will not be published.

Planted May 27, 2003. Harvested September 23, 2003.

Oil % is reported at 10% moisture and adjusted for oleic acid content.

Cooperator: Mark and Tim Pazour, Pukwana, SD.

Table 6. Oilseed sunflower hybrid yield trial, averaged over Ipswich and Miller, S.D., 2003.

Sunflower		Seed Yield (lbs/A)				Plant	Harv.	Test		Final
Brand-Hybrid	Type	2003	2002	2-yr	Oil	Hght	Moist.	Wght	Lodg	Pop.
		-2-	-3-^	-5-	%	in.	%	lbs/bu	%	plnt/A
Dekalb DK3875	Trad.	2410	1607	2009	39.0	63	12.9	28.3	5	17800
Proseed 9441	NuSun	2360	--	--	39.4	69	11.5	28.4	4	17900
Croplan CL821	Trad.	2232	--	--	39.6	66	12.8	26.0	7	18100
Pioneer hybrid 63M80	NuSun	2219	1197	1708	40.0	63	12.1	28.1	7	17400
Mycogen 8N421	NuSun	2173	1619	1896	39.7	66	11.6	26.8	7	17900
Mycogen 8377NS	NuSun	2149	--	--	40.0	65	11.4	28.3	7	17800
Mycogen X89910	NuSun	2127	--	--	37.9	64	12.7	27.2	5	18200
Kaystar 9411	Trad.	2112	--	--	40.2	65	11.9	28.5	7	17300
Legend LSF142N	NuSun	2089	1607	1848	38.4	64	11.6	27.9	4	18000
Pioneer hybrid EXP0302	NuSun	2080	--	--	38.0	66	12.5	27.2	6	18200
Dekalb EXP3880CL	Trad.	2054	--	--	39.4	60	11.2	27.5	4	18200
Mycogen Cavalry	Trad.	2053	--	--	41.1	70	13.6	28.9	7	18100
Legend LSF126N	NuSun	2044	--	--	38.0	64	12.7	27.8	6	18100
Croplan CL308	NuSun	2039	--	--	40.4	63	10.7	27.5	10	17900
Croplan CL345	NuSun	2038	--	--	39.6	66	12.5	27.9	6	17900
Interstate F10355	Trad.	2034	--	--	40.4	65	13.9	27.7	6	17400
Dekalb DKF33-33NS	NuSun	2034	1418	1726	38.5	62	12.5	27.8	7	18100
Seeds 2000 Ranger	NuSun	2008	--	--	39.1	61	12.0	27.5	10	18100
Interstate IS 4049	Trad.	2004	1299	1652	40.1	67	12.4	26.7	8	17900
Triumph 667	NuSun	1998	--	--	41.1	50	16.2	28.5	4	18200
Proseed Ex 14	NuSun	1996	--	--	39.4	66	12.0	26.9	10	18200
Croplan CL385	NuSun	1987	1542	1764	39.1	61	14.5	27.7	9	17300
Mycogen SF187	Trad.	1979	--	--	38.0	62	10.1	27.2	6	18200
Mycogen 8N327	NuSun	1977	1495	1736	40.6	64	11.4	27.8	8	17900
Dekalb DK3868	Trad.	1972	1194	1583	40.6	62	13.3	28.1	6	17700
Mycogen SF260	Trad.	1968	1361	1664	40.1	62	11.0	27.3	4	18100
Pioneer hybrid 63M52	NuSun	1966	1104	1535	38.7	64	12.9	27.2	10	17900
Dekalb DKF30-33NS	NuSun	1946	--	--	39.0	64	12.6	27.9	2	18100
Interstate Hysun 521	NuSun	1936	1399	1668	38.3	62	13.2	28.1	8	17900
Interstate IS 6039	Trad.	1935	999	1467	40.8	64	11.2	28.3	14	18200
Legend LSF117N	NuSun	1935	--	--	38.2	60	12.6	27.5	4	18200
Seeds 2000 Blazer	NuSun	1926	1282	1604	39.2	59	12.2	26.7	4	18200
Dekalb EXP38-30NS	NuSun	1917	--	--	39.2	65	13.6	28.1	3	17800
Proseed Ex 39	NuSun	1859	--	--	40.2	57	11.1	26.3	11	18200
Proseed 9405	NuSun	1840	1364	1602	39.8	61	15.6	27.0	3	17800
Pioneer hybrid EXP0301	NuSun	1834	--	--	39.2	61	12.3	26.7	11	17900
Interstate Hysun 450	NuSun	1833	1646	1739	39.7	63	14.4	27.8	3	17900
Pioneer hybrid 63M91	NuSun	1832	1117	1474	39.4	67	10.7	28.6	9	18200
Interstate IS 6767	Trad.	1824	1079	1451	40.8	64	12.1	29.0	10	18200
Proseed Ex 12	NuSun	1823	--	--	40.5	68	13.1	27.3	16	18200
Legend LSF119N	NuSun	1801	--	--	38.5	65	12.6	27.4	11	18200
Mycogen 8488NS	NuSun	1784	1406	1595	39.5	65	13.1	27.8	4	17900
Seeds 2000 Charger	NuSun	1748	--	--	38.7	66	14.4	27.9	9	18200
Proseed CL 55-15	NuSun	1715	--	--	38.2	64	10.6	27.2	6	18100
Legend LX02	NuSun	1703	--	--	39.1	67	12.6	27.5	11	16900
Proseed Ex 15	NuSun	1538	--	--	39.8	67	11.0	27.0	17	17900
USDA 894 (check)	Trad.	1461	1023	1242	39.9	66	11.0	26.7	28	18200
Grand Mean		1964	1316	1640	39.5	64	12.4	27.6	8	18000
LSD 5%		364	360		1.2	3	2.1	1.1	6	ns
C.V.		17.6	16.8		2.9	4.2	16.0	3.7	68.7	3.8

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

^ 2002 yields were averaged over Ipswich, Miller, and Pukwana.

Table 7. Hybrids and test sites for the 2003 South Dakota confection hybrid sunflower trials.

Sunflower Brand-Hybrid	Dak.* Lakes	Miller	Puk-wana
Dahlgren D-9518	X		
Dahlgren D-9525	X		
Dahlgren D-9530	X		
Harvest States RH118	X	X	X
Harvest States RH318	X	X	X
Interstate 8048	X	X	X
Seeds 2000 Grizzly		X	
Seeds 2000 X3987		X	
Sigco Sun Products Goliath RT		X	X
Sigco Sun Products Rustler		X	X
Triumph 757C		X	
USDA 924 (check)	X	X	X
Total Hybrids	7	9	6

* Dakota Lakes was not harvested due to excessive drought and bird damage.

Table 8. Confection hybrid sunflower yield trial, Miller, S.D., 2003.

Sunflower	Seed Yield (lbs/A)			Days to	Plant	Test		Final	% Seed Over Screen			Nut-
Brand-Hybrid	2003	2002	2-yr	Flower	Hght	Wght	Lodg	Pop.	22/64	20/64	18/64	meat
					cm	lb/bu	%	plnt/A				%
Sigco Sun Products Rustler	2085	--	--	69	181	25.5	7	16000	43	70	88	53
Harvest States RH118	1874	1588	1731	73	188	24.7	1	15600	38	66	87	51
Seeds 2000 Grizzly	1801	1383	1592	73	182	25.2	1	16000	38	69	86	52
Interstate 8048	1728	1285	1507	67	177	25.9	2	16000	34	62	84	56
Triumph 757C	1651	--	--	71	177	22.6	8	15800	64	79	88	52
Sigco Sun Products Goliath RT	1523	1257	1390	74	181	23.8	1	16000	45	73	85	50
USDA 924 (check)	1520	1598	1559	69	178	25.2	4	16000	21	46	75	56
Seeds 2000 X3987	1451	1571	1511	74	198	24.3	3	16000	38	70	90	52
Harvest States RH318	1120	--	--	67	175	24.0	14	15400	54	76	88	53
Grand Mean	1639	1324	1481	71	182	24.6	5	15900	42	68	86	53
LSD 5%	ns	367		2	13	1.7	5	ns	9	7	5	ns
C.V.	15.9	19.3		1.7	5.0	4.8	80.9	2.4	15.0	7.4	4.0	5.3

Planted May 29, 2003. Harvested September 26, 2003.

Table 9. Confection hybrid sunflower yield trial, Pukwana, S.D., 2003.

Sunflower	Seed Yield (lbs/A)			Plant	Test		Final	% Seed Over Screen			Nut-
Brand-Hybrid	2003	2002	2-yr	Hght	Wght	Lodg	Pop.	22/64	20/64	18/64	meat
				cm	lbs/bu	%	plnt/A				%
Harvest States RH118	2181	1368	1774	178	26.6	6	16000	35	68	84	53
USDA 924 (check)	1977	1307	1642	171	25.6	7	15000	36	67	85	54
Sigco Sun Products Goliath RT	1799	948	1374	166	24.9	6	15600	54	78	90	51
Interstate 8048	1670	550	1110	164	26.1	7	16000	43	67	82	56
Sigco Sun Products Rustler	1630	--	--	159	25.2	10	15000	36	69	87	54
Harvest States RH318	1311	--	--	165	24.9	18	16000	45	73	89	55
Grand Mean	1761	1112	1436	167	25.5	9	15600	42	70	86	54
LSD 5%	439	249		ns	ns	ns	ns	ns	ns	ns	ns
C.V.	16.4	14.8		6.0	5.8	65.6	6.6	26.9	10.9	5.5	5.3

Planted May 27, 2003. Harvested September 24, 2003.

Table 10. Confection hybrid sunflower yield trial averaged over Miller and Pukwana, S.D., 2003.

Sunflower	Seed Yield (lbs/A)			Plant	Test		Final	% Seed Over Screen			Nut-
Brand-Hybrid	2003	2002	2-yr	Hght	Wght	Lodg	Pop.	22/64	20/64	18/64	meat
				cm	lbs/bu	%	plnt/A				%
Harvest States RH118	2026	1492	1759	183	25.6	3	15800	36	67	85	52
Sigco Sun Products Rustler	1856	--	--	170	25.3	9	15500	39	69	88	53
USDA 924 (check)	1747	1467	1607	175	25.4	6	15500	29	57	80	55
Interstate 8048	1698	932	1315	170	26.0	5	16000	39	64	83	56
Sigco Sun Products Goliath RT	1660	1117	1388	174	24.4	4	15800	49	76	87	50
Harvest States RH318	1214	--	--	170	24.4	16	15700	49	75	88	54
Grand Mean	1700	1274	1487	174	25.2	7	15700	40	68	85	53
LSD 5%	597	424		10	1.4	1	1.2	18	15	9	3
C.V.	15.1	18.3		5.5	5.1	72.7	5.0	22.5	11.2	4.8	5.7

Table 11. NuSun hybrid sunflower yield trial, Onida, S.D., 2003.

Sunflower		Seed Yield (lbs/A)			Oil	Days to		Test Wght	Head Diam.	Plant Hght	Harv. Moist.	Final Stand	Hulling Quality
Brand-Hybrid	Type	2003	2002	2-yr	%	Flwr	Mat.	lb/bu	in.	in.	%	%	Test
Triumph 667	NuSun	2171	--	--	40.4	69	104	27.3	7.3	49	10.0	100	NT
Mycogen SF187	Trad.	2134	--	--	37.3	68	101	27.5	7.0	55	10.2	100	NT
Mycogen 8377NS	NuSun	2031	3101	2566	37.3	65	101	27.4	5.7	61	10.4	100	NT
Monsanto EXP38-30NS	NuSun	2018	--	--	39.8	68	103	27.7	6.6	62	9.5	92	Excel.
Interstate Hysun 450	NuSun	2006	3234	2620	38.4	71	103	27.3	5.4	61	9.7	100	NT
Interstate HyOleic 120	HO	1948	--	--	39.1	65	102	27.8	7.0	67	9.3	85	NT
Legend LX02	NuSun	1946	--	--	39.6	72	104	27.8	6.1	58	10.0	93	NT
Mycogen SF260	Trad.	1920	3088	2504	39.1	68	100	26.9	7.2	52	9.5	87	NT
Proseed 9405	NuSun	1917	3248	2582	36.6	69	103	25.9	5.9	60	10.6	100	NT
Triumph 636	NuSun	1908	3582	2745	40.9	69	101	24.2	6.3	66	9.7	88	Excel.
Proseed Ex 12	NuSun	1908	--	--	38.0	69	102	27.1	6.9	59	10.0	95	NT
Triumph 645	NuSun	1903	--	--	40.5	69	102	26.8	4.9	65	10.4	100	Excel.
Interstate F10024HO	HO	1897	--	--	35.6	67	100	27.8	5.9	52	9.4	88	NT
Pioneer 63M91	NuSun	1895	2682	2288	37.5	66	100	28.8	6.6	64	9.4	100	NT
Mycogen 8488NS	NuSun	1884	3177	2530	38.9	67	101	26.9	6.4	63	8.1	100	NT
IntegraSeeds INT 536NS	NuSun	1863	3126	2494	37.3	63	101	27.9	5.5	56	9.7	100	NT
Croplan 380	NuSun	1833	2975	2404	39.1	68	103	29.0	6.0	64	9.5	100	NT
Pioneer 63M80	NuSun	1827	3262	2544	36.8	66	102	28.6	6.8	65	10.4	85	NT
Mycogen 8N421	NuSun	1826	3302	2564	39.0	69	105	27.6	6.1	66	8.9	88	NT
Triumph 658	NuSun	1821	3779	2800	39.1	68	100	25.2	6.6	63	10.1	100	Excel.
Pioneer 63M52	NuSun	1810	2665	2238	37.5	66	99	26.3	6.5	58	9.4	98	NT
Proseed Ex 39	NuSun	1802	--	--	37.5	67	101	26.0	6.4	48	9.8	100	NT
IntegraSeeds INT 550NS	NuSun	1793	2797	2295	38.3	70	102	26.9	7.3	57	10.2	97	NT
Legend LSF119N	NuSun	1782	--	--	37.2	67	101	26.7	5.9	62	10.1	97	Excel.
Proseed 9441	NuSun	1780	--	--	39.0	70	103	26.8	6.4	60	10.2	97	NT
Interstate F10016NS	NuSun	1776	--	--	36.1	67	102	27.1	6.2	54	10.4	100	NT
Croplan 345	NuSun	1761	3300	2531	38.5	65	98	26.9	5.6	67	9.6	95	NT
Triumph 665	NuSun	1757	--	--	38.2	69	102	27.5	6.5	59	10.4	100	NT
Seeds 2000 Ranger	NuSun	1756	2982	2369	37.3	68	103	26.7	7.1	58	10.3	90	NT
Interstate Hysun 521	NuSun	1740	3408	2574	36.2	64	100	26.2	5.6	55	9.9	100	NT
Legend LSF142N	NuSun	1730	2893	2311	38.6	71	104	27.6	6.3	54	10.9	68	NT
Croplan 385	NuSun	1720	2814	2267	38.8	71	104	28.1	6.3	52	10.5	92	NT
Seeds 2000 Charger	NuSun	1719	--	--	36.5	69	105	26.6	5.8	64	10.8	100	NT
Red River Comm RR 2011	NuSun	1719	3728	2723	37.1	68	100	25.8	6.3	65	9.2	85	Excel.
Monsanto DKF30-33NS	NuSun	1695	--	--	36.8	66	102	26.7	5.4	66	10.2	100	Excel.
IntegraSeeds INT 552NS	NuSun	1694	--	--	38.4	71	103	27.6	5.7	63	10.0	95	NT
Mycogen X89910	NuSun	1692	--	--	34.6	66	100	25.7	6.8	64	9.8	100	Excel.
Proseed Ex 14	NuSun	1663	--	--	37.4	68	102	27.3	5.5	62	9.6	95	NT
Seeds 2000 Bronco	NuSun	1644	3420	2532	39.4	71	104	27.6	6.1	54	10.6	100	NT
Triumph TRX 2241	NuSun	1631	--	--	37.0	68	100	26.8	6.5	59	9.7	100	NT
Interstate Hysun 424	NuSun	1628	--	--	38.9	70	102	28.3	5.7	58	9.9	100	NT
Proseed CL 55-15	NuSun	1627	--	--	36.2	69	101	25.9	8.7	60	9.6	100	Excel.
Legend LSF117N	NuSun	1626	--	--	38.1	67	102	26.9	5.0	56	10.6	100	NT
Proseed Ex 15	NuSun	1610	--	--	39.4	67	101	25.9	5.5	55	9.7	100	Excel.
Triumph TRX 3321	NuSun	1547	--	--	38.7	70	104	27.6	6.1	46	9.9	92	Excel.
Pioneer EXP0302	NuSun	1519	--	--	35.9	66	100	27.6	6.0	58	9.9	100	NT
Red River Comm RR 2010	NuSun	1515	3375	2445	35.5	67	98	25.3	5.3	60	9.3	100	Excel.
Seeds 2000 Blazer	NuSun	1514	2792	2153	38.9	69	103	27.3	6.4	56	10.1	93	NT
Pioneer EXP0301	NuSun	1501	--	--	36.8	65	101	27.1	5.6	53	10.1	100	NT
Mycogen 8N327	NuSun	1462	3020	2241	39.5	67	102	27.9	5.7	56	9.2	93	NT
Interstate F10022HO	HO	1457	--	--	35.4	65	99	27.4	5.3	55	9.6	95	NT
Monsanto DKF33-33NS	NuSun	1390	2678	2034	35.5	65	98	26.4	5.4	62	10.0	100	Excel.
Legend LSF126N	NuSun	1334	2755	2044	37.8	69	100	26.9	4.5	53	10.4	100	Excel.
Interstate Hysun 525	NuSun	1299	--	--	37.3	68	100	27.0	5.5	54	10.2	88	Excel.
Grand mean		1745	3042	2394	37.9	68	102	27.0	6.1	59	9.9	96	
LSD 5%		301	547		4.0	4	6	2.6	ns	9	ns	ns	
C.V.		10.6	11.1		3.7	2.2	2.1	3.4	17.9	5.4	7.9	10.4	

Planted June 7, 2003.
Hulling quality test: NT = not tested, Excel.= ≥65% of seed passes over a 14/64 screen, Good = ≥75% of seed passes over a 13/64 screen.

Table 12. NuSun hybrid sunflower yield trial, Selby, S.D., 2003.

Sunflower Brand-Hybrid	Type	Seed Yield lbs/A	Oil %	Days to Flwr	Days to Mat.	Test Wght lb/bu	Head Diam. in.	Plant Hght in.	Lodg %	Harv. Moist. %	Final Stand %
Mycogen SF187	Trad.	2561	40.4	66	101	28.9	9.0	46	3	8.4	100
Triumph 658	NuSun	2253	41.1	67	100	27.6	7.1	61	10	8.0	100
Mycogen 8377NS	NuSun	1901	41.0	63	97	29.8	6.0	58	9	8.0	100
Seeds 2000 Blazer	NuSun	1879	38.5	65	100	27.9	6.8	52	7	7.8	100
Croplan 345	NuSun	1871	41.3	63	96	30.6	6.0	60	15	7.6	100
Seeds 2000 Charger	NuSun	1818	37.9	66	102	28.4	6.5	62	7	8.4	100
Pioneer 63M80	NuSun	1803	39.5	65	98	28.0	6.6	58	7	8.3	100
Pioneer 63M52	NuSun	1778	42.0	64	99	27.6	7.2	55	6	7.8	100
Red River Comm RR 2010	NuSun	1767	37.0	65	99	27.6	6.3	61	4	7.8	100
Monsanto DKF30-33NS	NuSun	1726	38.8	64	101	29.4	5.7	58	7	8.4	100
Red River Comm RR 2011	NuSun	1718	39.4	66	102	28.8	6.7	63	2	7.5	100
Croplan 308	NuSun	1660	40.5	62	95	27.4	6.2	50	4	8.2	92
IntegraSeeds INT 552NS	NuSun	1606	39.4	68	100	28.1	5.3	54	9	8.2	100
Interstate F10024HO	HO	1603	40.6	66	98	30.3	6.1	51	15	8.0	100
Triumph 667	NuSun	1591	41.5	68	103	27.5	5.9	47	6	8.1	100
Interstate H10022HO	HO	1591	40.5	64	98	29.3	6.1	50	10	7.9	100
Pioneer 63M91	NuSun	1582	40.0	63	98	28.3	5.9	60	8	8.0	100
Triumph 636	NuSun	1579	41.8	66	102	27.5	7.0	57	9	8.2	100
Mycogen 8N327	NuSun	1558	41.3	62	97	28.7	5.5	54	10	8.1	100
Proseed 9405	NuSun	1547	39.3	67	101	27.3	5.3	58	5	8.8	100
Triumph TRX 3241	NuSun	1527	40.4	63	94	29.1	5.0	55	7	8.2	100
Seeds 2000 Ranger	NuSun	1521	38.3	63	98	27.7	5.9	54	6	8.2	100
Legend LSF142N	NuSun	1483	40.3	68	100	27.4	6.1	56	9	8.8	100
Croplan 385	NuSun	1481	38.6	68	100	27.5	6.2	54	3	7.9	100
Pioneer EXP0301	NuSun	1473	39.5	62	98	26.5	6.3	52	12	7.7	93
Mycogen X89910	NuSun	1471	39.7	63	98	28.3	5.4	58	3	8.2	100
IntegraSeeds INT 550NS	NuSun	1454	39.2	68	98	27.5	5.9	52	9	7.9	100
Croplan 380	NuSun	1453	40.4	66	100	27.8	5.7	60	7	8.0	100
Legend LSF117N	NuSun	1436	39.6	60	97	28.1	7.5	52	9	8.2	92
Proseed CI 55-15	NuSun	1428	35.3	67	98	25.6	7.4	58	4	7.9	100
Proseed Ex 12	NuSun	1428	38.4	65	98	27.4	6.9	60	7	7.6	100
Interstate Hysun 424	NuSun	1421	39.7	68	101	28.4	6.6	59	12	8.2	100
Monsanto EXP38-30NS	NuSun	1407	40.6	68	103	29.0	6.4	58	11	8.2	100
Nidera fn693	NuSun	1407	40.1	67	102	27.7	6.6	63	4	7.8	100
Proseed Ex 15	NuSun	1379	39.6	64	97	28.2	6.7	56	6	8.3	100
Interstate Hysun 521	NuSun	1342	39.5	61	95	28.3	5.7	53	7	7.7	100
Triumph 645	NuSun	1334	41.3	67	102	27.6	5.6	56	6	8.6	100
Proseed Ex 14	NuSun	1317	39.7	64	99	27.4	5.9	60	6	8.0	100
Legend LSF119N	NuSun	1268	40.2	65	98	28.5	6.1	58	18	7.8	100
Monsanto DKF33-33NS	NuSun	1217	38.4	62	95	27.6	5.5	55	11	7.8	95
IntegraSeeds INT 536NS	NuSun	1202	38.7	61	97	28.7	5.7	56	6	7.9	100
Proseed 9441	NuSun	1200	39.3	68	100	26.0	7.4	62	13	7.7	93
Interstate Hysun 450	NuSun	1165	39.0	69	100	26.8	6.3	51	13	7.9	100
Pioneer EXP0302	NuSun	1147	38.8	63	94	27.9	5.8	51	14	7.8	100
Mycogen 8488NS	NuSun	1125	44.4	66	100	27.8	5.6	54	12	8.5	100
Mycogen SF260	Trad.	1045	41.1	65	96	28.0	7.2	52	5	8.0	100
Proseed Ex 39	NuSun	1038	39.4	64	96	27.2	6.6	51	6	7.7	100
Interstate HyOleic 120	HO	972	41.2	63	98	29.5	5.1	63	7	8.1	100
Mycogen 8N421	NuSun	970	41.6	67	103	27.7	4.8	54	6	8.3	100
Interstate Hysun 525	NuSun	953	38.8	66	97	27.6	5.3	51	19	7.9	100
Legend LSF126N	NuSun	719	39.6	67	99	28.5	5.5	50	17	7.8	93
Legend LX02	NuSun	672	38.5	68	98	27.9	6.3	53	15	7.4	100
Grand mean		1451	39.8	65	99	28.0	6.2	56	8	8.0	99
LSD 5%		359	4.0	1	4	3.5	1.4	7	ns	0.5	ns
C.V.		15.3	3.5	1.2	2.7	4.4	13.7	8.0	74.6	3.8	4.2

Planted June 9, 2003.

Table 13. Confection hybrid sunflower yield trial, Onida, S.D., 2003.

Sunflower	Seed Yield (lbs/A)			Test Wght	Days to		Head Diam.	Plant Hght	Harv. Moist.	% Over 20/64
Brand-Hybrid	2003	2002	2-yr	lb/bu	Flwr	Mat.	in.	in.	%	Screen
Seeds 2000 X3987	2226	3018	2622	24.3	71	107	6.5	67	10.4	53
Seeds 2000 Grizzley	2145	2680	2412	24.0	71	105	6.7	66	10.2	56
Red River Comm RR 7015	2142	--	--	21.9	70	106	7.3	66	10.6	70
Mycogen X91416	2134	2984	2559	23.1	70	102	7.0	71	10.9	64
Red River Comm RR 2215	2034	--	--	23.9	68	103	6.5	64	9.9	47
Red River Comm RR 2582	1978	3451	2715	24.1	66	101	6.6	65	9.8	47
Interstate 8048	1899	2522	2211	24.3	68	101	5.9	64	10.1	51
Red River Comm RR 2213	1851	2789	2320	24.1	67	99	5.7	64	9.9	45
Grand mean	2020	2916	2468	23.7	68	102	6.4	65	10.2	54
LSD 5%	ns	ns		ns	3	4	ns	ns	ns	ns
C.V.	8.1	16.4		4.2	2.7	2.4	9.1	11.4	4.6	24.2

Planted June 7, 2003.

Table 14. Confection hybrid sunflower yield trial, Selby, S.D., 2003.

Sunflower	Seed Yield (lbs/A)			Test Wght	Days to		Head Diam.	Plant Hght	Harv. Moist.	% Over 20/64	Lodg
Brand-Hybrid	2003	2002	2-yr	lb/bu	Flwr	Mat.	in.	in.	%	Screen	%
Red River Comm RR 2215	1911	--	--	24.9	66	102	7.5	73	8.6	67	3
Red River Comm RR 7015	1879	--	--	23.8	65	104	8.5	75	8.6	75	2
Interstate IS 8048	1637	--	--	25.9	63	101	6.6	72	8.7	60	1
Red River Comm RR 2213	1622	829	1226	26.0	66	99	7.0	75	8.8	66	2
Red River Comm RR 2582	1330	765	1048	25.9	66	99	6.6	72	8.4	45	4
Grand mean	1676	1043	1359	25.3	65	101	7.3	73	8.6	63	2
LSD 5%	ns	300		1.5	2	ns	1.0	ns	ns	16	ns
C.V.	16.6	16.4		3.4	1.6	1.7	7.3	5.6	3.8	14.1	79.0

Planted June 9, 2003.

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COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

South Dakota Flax Variety Evaluations 2003

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The success of flax production is affected by choice of variety. Carefully examine variety characteristics such as seed yield, oil content, and maturity. In some cases oil content or maturity may offset a yield advantage.

Yield

Evaluate as much yield data as possible, looking at relative performance over many locations and years. For example, in this publication, variety comparisons from 3 years and five locations are better than those from a single year or location. Consistently good performance over many environments is called "yield stability."

Good yield stability means that a variety may or may not be the best yielder at all locations, but it does rank high in yield potential at many locations. A variety that ranks in the upper 20% over all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

Table 1 presents flax yield data from 2003 (or the most recent year for which data are available) for several sites in South Dakota. Three-year and statewide yield averages are also provided. Table 2 summarizes the characteristics of the varieties included in the performance trials.

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.05) value at the bottom of each data column. The LSD value is a statistical way to indicate if a trait like yield differs when comparing two varieties. If two varieties differ by more than the indicated LSD value for a given trait, they will likely differ when grown again under highly similar conditions.

For example, if the trial at Webster could be repeated exactly as it was in 2003 (see Table 1), the yield ranking of AC Emerson (35.6 bu/A) and AC Watson (30.8 bu/A) might change places since their yield difference (4.8 bu/A) is less than the indicated LSD value of 5.5 bu/A. However, we would expect AC Emerson (35.6 bu/A) to yield more than Cathay (29.2 bu/A) if the test was repeated since their yield difference (6.4 bu/A) is greater than the indicated yield LSD value of 5.5 bu/A.

In Table 1, the minimum yield of varieties in the top-yielding group at a particular location is at the bottom of each data column (when significant differences in yield were measured). Any variety meeting or exceeding this minimum yield value differed by less than the LSD.05 value from the highest-yielding variety in the test and is therefore considered to be in the top-yielding group. For example, in the 2003 trial at Webster there were 12 varieties in the top-yield group. Numerically, AC Emerson had the highest yield (35.6 bu/A). However, 11 other varieties were also in the top-yield group because their yields were within one LSD value (5.5 bu/A) of AC Emerson.

If the LSD.05 value is indicated as 'ns,' there were no statistically significant differences in yield among the varieties. In other words, the variety yields were all close enough to each other to be essentially the same, considering the amount of error inherent in the test.

When evaluating yield, look at as many trials as possible. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for making variety choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Oil Content

Among varieties with similar yield potential, select the one with the highest oil content.

Maturity

Later-maturing varieties generally will produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding only an early variety will mature properly and exhibit its best yield potential and oil content.

Seed Availability and Quality

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high quality seed with good germination. Certified seed is recommended to assure varietal purity, viability, and freedom from pathogens and weed seed.

Table 1. 2003 and three-year average flax yields(bu/A) at several locations in South Dakota.

Variety	Origin -Year	Brookings Early-Seeded 2000	Brookings Early-Seeded 3-yr	Brookings Late-seeded 2003	Brookings Late-seeded 3-yr	Watertown 2002	Watertown 3-yr	Webster 2003	Webster 3-yr	Highmore 2003	Statewide 2003	Statewide 3-yr	Statewide Rank	Yield* Stability
			-3-		-4-		-3-		-3-		-3-	-14-		
AC Carnduff	CAN-99	28.2	21.8	18.9	13.1	15.5	16.1	31.7	22.4	23.6	24.8	19.0	2	8/14
AC Emerson	CAN-95	29.5	21.2	18.2	14.8	11.0	12.7	35.6	20.0	20.8	25.3	17.7	18	11/14
AC Hanley	CAN-02	--	--	18.2	--	11.7	--	30.9	--	16.3	22.4	17.6	20	5/6
AC Watson	CAN-97	25.4	17.0	16.6	14.8	12.8	13.0	30.8	24.2	22.2	23.2	17.9	15	9/14
Cathay	ND-97	26.2	19.1	18.9	13.2	13.9	14.1	29.2	23.2	18.8	22.7	17.9	15	5/14
CDC Arras	CAN-00	31.7	20.8	23.1	14.7	13.8	13.1	31.8	24.2	19.5	25.4	18.6	6	9/14
CDC Bethume	CAN-00	27.8	18.7	19.7	15.4	12.3	12.9	30.8	23.3	21.0	24.1	18.1	12	9/14
CDC Mons	CAN-03	--	--	15.7	--	--	--	30.6	--	--	--	--	--	2/2
CDC Normandy	CAN-96	25.7	18.4	24.0	14.5	12.3	14.4	29.8	21.9	21.5	25.5	18.2	11	5/14
CDC Valour	CAN-97	25.6	17.5	18.0	12.3	13.3	15.9	26.3	18.7	18.2	21.1	16.6	22	6/14
Day	SD-90	32.3	21.2	19.1	14.7	12.5	14.2	27.4	21.6	20.4	22.5	18.3	9	9/14
Linora	CAN-92	26.5	20.4	26.8	14.2	12.3	15.6	29.0	24.0	19.5	25.7	19.4	1	8/14
Linott	CAN-66	28.1	18.9	18.9	13.6	13.4	14.1	26.9	21.5	21.0	22.3	17.7	18	6/14
McGregor	CAN-82	28.7	17.8	20.7	14.3	9.9	10.7	28.1	23.0	17.4	22.6	16.9	21	5/14
Neche	ND-88	33.0	21.0	19.4	13.8	13.1	14.8	32.3	25.2	18.5	23.9	19.0	2	8/14
Nekoma	ND-02	--	18.5	23.5	14.6	11.6	16.8	28.6	21.7	18.8	24.2	18.3	9	6/14
Omega	ND-90	28.8	21.4	18.9	14.0	14.1	13.8	30.1	24.3	19.5	23.1	18.7	5	9/14
Pembina	ND-97	25.8	17.7	22.3	13.6	10.2	12.6	26.3	21.2	14.3	21.7	16.4	23	4/14
Prairie Blue	CAN-03	--	--	20.6	--	11.0	--	29.0	--	21.6	23.9	--	--	3/4
Prompt	SD-89	24.0	18.7	21.6	15.1	10.9	15.1	25.5	20.9	19.8	22.5	18.1	12	8/14
Rahab 94	SD-94	27.2	17.7	22.0	15.1	10.6	14.5	33.8	22.8	19.0	25.6	18.0	14	7/14
Selby	SD-00	27.5	18.3	22.7	14.5	15.1	16.3	26.3	22.6	20.6	23.5	18.6	6	8/14
Verne 93	SD-93	26.4	19.9	21.5	15.1	14.2	16.6	27.2	22.3	20.3	23.2	19.0	2	8/14
Webster	SD-98	31.6	18.9	20.4	13.0	14.6	16.6	29.4	22.1	17.1	22.8	17.8	17	7/14
York	ND-02	28.2	21.2	23.4	16.3	12.6	14.2	29.6	21.3	17.2	24.1	18.5	8	8/14
Experimentals														
N0010	ND-exp.	--	--	15.3	--	12.2	--	32.0	--	19.3	22.5	18.8	--	5/6
FP1096	CAN-exp.	--	--	20.0	--	12.4	--	30.5	--	20.7	24.0	17.2	--	5/6
N0009	ND-exp.	--	--	21.5	--	14.0	--	26.7	--	20.4	23.1	--	--	3/4
Grand Mean		27.8	19.4	20.4	14.3	12.6	14.4	29.6	22.4	19.5	23.5	18.1		
LSD.05		4.2	ns^	ns	ns	ns	ns	5.5	ns	3.9	ns	ns		
Minimum yield of top group		28.8	ns	ns	ns	ns	ns	30.1	ns	19.7	ns	ns		
C.V.		9.3	12.0	14.6	13.9	16.0	15.6	11.4	14.2	9.7	13.3	13.9		

* Yield stability = number of times in top yield group/total number of tests.

^ ns = there were no significant differences in yield among the varieties.

Table 2. Characteristics of flax varieties.

Variety	Origin -Year	Days to Flower	Seed Size	Color Flower	Color Seed	Statewide Averages Oil %	Height (cm)	Yield (bu/A) 2003	Yield (bu/A) 3-yr	Lodging (1-9)*	Disease Resistance Wilt	Disease Resistance Rust
		-3-			-11-	-13-	-3-	-14-	-3-			
AC Carnduff	CAN-99	51	Small	Blue	Brown	39.4	49	24.8	19.0	3	MR	R
AC Emerson	CAN-95	50	Medium	Blue	Brown	38.8	50	25.3	17.7	5	R	R
AC Hanley	CAN-02	50	Small	Blue	Brown	37.4	45	22.4	17.6	--	MR	R
AC Watson	CAN-97	48	Med-Lg	Blue	Brown	39.2	48	23.2	17.9	4	MS	R
Cathay	ND-97	51	Medium	Blue	Brown	40.1	53	22.7	17.9	1	R	R
CDC Arras	CAN-00	51	Medium	Blue	Brown	39.7	51	25.4	18.6	6	R	R
CDC Bethume	CAN-00	51	Medium	Blue	Brown	40.1	52	24.1	18.1	2	MR	R
CDC Mons	CAN-03	--	--	Blue	Brown	--	--	--	--	--	--	R
CDC Normandy	CAN-96	48	Med-Sm	Blue	Brown	38.9	51	25.5	18.2	4	MR	R
CDC Valour	CAN-97	46	Medium	Blue	Brown	38.8	46	21.1	16.6	5	S	R
Day	SD-90	47	Small	Blue	Brown	40.4	49	22.5	18.3	3	MR	R
Linora	CAN-92	48	Med-Sm	Blue	Brown	39.7	50	25.7	19.4	3	MR	R
Linott	CAN-66	47	Med-Sm	Blue	Brown	39.6	51	22.3	17.7	4	MS	R
McGregor	CAN-82	53	Medium	Blue	Brown	38.6	52	22.6	16.9	2	MR	R
Neche	ND-88	49	Small	Blue	Brown	39.8	51	23.9	19.0	2	MS	R
Nekoma	ND-02	50	Med-Sm	Blue	Brown	40.1	51	24.2	18.3	1	MR	R
Omega	ND-90	49	Medium	Blue	Yellow	39.8	50	23.1	18.7	3	MS	R
Pembina	ND-97	51	Med-Sm	Blue	Brown	39.5	52	21.7	16.4	2	R	R
Prairie Blue	CAN-03	--	--	Blue	Brown	--	--	23.9	--	--	MR	R
Prompt	SD-89	44	Small	Blue	Brown	39.4	47	22.5	18.1	2	MR	R
Rahab 94	SD-94	51	Medium	Blue	Brown	40.1	49	25.6	18.0	1	MR	R
Selby	SD-00	51	Medium	Blue	Brown	40.3	53	23.5	18.6	2	MR	R
Verne 93	SD-93	47	Med-Sm	Blue	Brown	39.9	51	23.2	19.0	3	R	R
Webster	SD-98	52	Med-Sm	Blue	Brown	39.9	55	22.8	17.8	3	MR	R
York	ND-02	52	Medium	Blue	Brown	39.3	49	24.1	18.5	2	MR	R
Experimentals												
N0010	ND-exp.	48	Small	Blue	Yellow	39.2	49	22.5	18.8	--	S	R
FP1096	CAN-exp.	51	Medium	Blue	Brown	40.3	51	24.0	17.2	--	MR	R
N0009	ND-exp.	--	--	Blue	Yellow	--	--	23.1	--	--	MS	R
Grand Mean		50				39.5	50	23.5	18.1	3		
LSD.05		2				0.6	2	ns	ns	2		
C.V.		2.6				1.8	4.8	13.3	13.9	40		

* Lodging rated on a scale of 1 to 9, where 1=no lodging and 9=flat.

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Extension Extra

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Plant Science

COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

South Dakota Flax Variety Evaluations: 2004

Kathleen Grady, oilseed breeder and Extension specialist
and Lee Gilbertson, senior ag research technician

The success of flax production is affected by choice of variety. Carefully examine variety characteristics such as seed yield, oil content, and maturity. In some cases oil content or maturity may offset a yield advantage.

Yield

Evaluate as much yield data as possible, looking at relative performance over many locations and years. For example, in this publication, variety comparisons from 3 years and 5 locations are better than those from a single year or location. Consistently good performance over many environments is called "yield stability."

Good yield stability means that a variety may or may not be the best yielder at all locations, but it does rank high in yield potential at many locations. A variety that ranks in the upper 20% over all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

Table 1 presents flax yield data from 2004 (or the most recent year for which data are available) for several sites in South Dakota. Three-year and statewide yield averages are also provided. Table 2 summarizes the characteristics of the varieties included in the performance trials.

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.05) value at the bottom of each data column. The LSD value is a statistical way to indicate if a trait like yield differs when comparing two varieties. If two varieties differ by more than the LSD value for a given trait, they will likely differ when grown again under highly similar conditions. For example, if the trial at Webster could be repeated exactly as it was in 2004 (see Table 1), the yield ranking of AC Watson (50.8 bu/A) and AC Hanley (45.6 bu/A) might change places since their yield difference (5.2 bu/A) is less than the indicated LSD value of 6.6 bu/A.

However, we would expect AC Watson (50.8 bu/A) to yield more than AC Emerson (43.7 bu/A) if the test was repeated, since their yield difference (7.1 bu/A) is greater than the indicated yield LSD value of 6.6 bu/A.

In Table 1, the minimum yield of varieties that were in the top-yielding group at a particular location is printed at the bottom of each data column (when significant differences in yield were measured). Any variety meeting or exceeding this minimum yield value differed by less than the LSD.05 value from the highest-yielding variety in the test and is therefore considered to be in the top-yielding group.

For example, in the 2004 trial at Watertown there were six varieties in the top-yield group. Numerically, CDC Arras had the highest yield (41.2 bu/A). However five other varieties were also in the top-yield group because their yields were within one LSD value (5.1 bu/A) of CDC Arras.

If the LSD.05 value is indicated as 'ns,' it means there were no statistically significant differences in yield among the varieties; in other words, yields were all close enough to each other to be essentially the same, considering the amount of error inherent in the test.

When evaluating yield, look at as many trials as possible. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for

making variety choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Oil Content

Among varieties with similar yield potential, select the one with the highest oil content.

Maturity

Later-maturing varieties generally produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding only an early variety will mature properly and exhibit its best yield potential and oil content.

Table 1. 2004 and 3-year average flax yields (bu/A) at several locations in South Dakota.

Variety	Origin -Year	Brkngs Early 2004	Brookings Late-seeded 2004	Brookings Late-seeded 2-yr -2-	Watertown 2004	Watertown 2-yr -2-	Webster 2004	Webster 3-yr -3-	Highmore 2003	Statewide 2004 -4-	Statewide 3-yr -9-	Statewide Rank	Yield* Stability
AC Carnduff	CAN-99	34.0	23.5	20.8	33.9	24.7	46.4	32.0	23.6	34.4	27.2	1	4/5
AC Emerson	CAN-95	25.8	22.6	18.7	36.6	23.8	43.7	30.7	20.8	32.2	25.2	12	3/5
AC Hanley	CAN-02	28.0	24.4	21.5	30.1	20.9	45.6	30.9	16.3	32.0	24.6	18	2/5
AC Watson	CAN-97	24.7	25.0	20.0	35.0	23.9	50.8	33.9	22.2	33.9	26.4	5	3/5
Carter	ND-04	32.4	21.8	18.6	31.7	22.0	43.3	31.9	19.3	32.3	25.4	11	2/5
Cathay	ND-97	23.9	25.3	21.8	27.8	20.9	39.9	30.0	18.8	29.2	24.3	19	0/5
CDC Arras	CAN-00	27.1	21.6	23.4	41.2	27.5	48.4	32.4	19.5	34.6	27.0	3	3/5
CDC Bethume	CAN-00	29.1	23.3	21.3	38.2	25.3	47.8	32.3	21.0	34.6	26.7	4	5/5
CDC Mons	CAN-03	31.6	24.2	--	30.7	--	45.8	--	--	33.1	--	--	3/4
CDC Normandy	CAN-96	26.4	25.4	25.6	26.6	19.4	41.9	30.3	21.5	30.1	25.2	14	1/5
CDC Valour	CAN-97	23.8	22.6	20.3	31.3	22.3	48.7	30.3	18.2	31.6	24.2	20	1/5
Linora	CAN-92	32.5	23.1	24.5	35.4	23.8	45.0	31.8	19.5	34.0	27.2	2	2/5
Linott	CAN-66	27.4	20.7	20.6	32.3	22.9	44.9	31.1	21.0	31.3	25.2	13	2/5
McGregor	CAN-82	19.2	21.1	19.9	32.9	21.4	47.9	33.5	17.4	30.3	24.6	17	1/5
Nekoma	ND-02	32.1	22.9	22.4	32.0	21.8	39.2	28.6	18.8	31.5	25.2	15	1/5
Omega	ND-90	24.2	20.7	16.8	24.3	19.2	43.7	30.1	19.5	28.2	23.6	21	1/5
Pembina	ND-97	28.9	26.5	23.9	34.0	22.1	42.7	29.1	14.3	33.0	24.8	16	1/5
Prairie Blue	CAN-03	33.9	26.2	24.9	33.2	22.2	39.0	--	21.6	33.1	--	--	2/5
Rahab 94	SD-94	25.8	22.1	22.8	36.4	23.5	45.8	33.3	19.0	32.5	26.2	6	3/5
Selby	SD-00	27.4	26.9	22.6	33.8	24.5	42.2	29.6	20.6	32.6	26.1	7	1/5
Verne 93	SD-93	29.3	24.5	23.3	27.3	20.8	46.3	32.0	20.3	31.8	25.9	9	3/5
Webster	SD-98	28.2	27.3	25.3	34.3	24.5	43.2	30.2	17.1	33.3	25.8	10	0/5
York	ND-02	29.1	23.0	21.7	34.1	23.4	45.8	31.3	17.2	33.0	25.9	8	2/5
Experimentals													
FP2112	CAN-exp.	32.9	25.3	--	32.1	--	42.6	--	--	33.2	--	--	2/4
FP2114	CAN-exp.	24.7	22.4	--	31.8	--	46.4	--	--	31.3	--	--	1/4
FP2118	CAN-exp.	27.6	18.5	--	35.0	--	47.5	--	--	32.1	--	--	1/4
FP2119	CAN-exp.	29.0	19.7	--	33.2	--	44.9	--	--	31.7	--	--	3/4
N2007	ND-exp.	24.4	23.8	--	31.4	--	--	--	--	--	--	--	0/2
N2010	ND-exp.	30.1	20.5	--	27.6	--	--	--	--	--	--	--	1/2
N2014	ND-exp.	28.2	20.3	--	32.5	--	--	--	--	--	--	--	0/2
N305	ND-exp.	25.2	21.5	--	30.8	--	--	--	--	--	--	--	0/2
N320	ND-exp.	28.5	23.9	--	36.1	--	--	--	--	--	--	--	2/2
N323	ND-exp.	29.6	26.5	--	36.4	--	--	--	--	--	--	--	2/2
N325	ND-exp.	29.8	23.3	--	31.7	--	--	--	--	--	--	--	1/2
Grand Mean		28.1	23.2	21.8	32.7	22.8	44.5	31.2	19.5	32.1	25.6		
LSD.05		5.7	ns^	ns	5.1	ns	6.6	ns	3.9	ns	ns		
Minimum yield of top group		28.3	18.5	16.8	36.1	19.2	44.2	28.6	19.7	28.2	23.6		
C.V.		12.4	14.8	15.0	9.6	12.1	9.0	10.0	9.7	9.9	10.7		

* Yield stability = number of times in top yield group/total number of tests having significant differences.
^ ns = there were no significant differences in yield among the varieties.

Seed Availability and Quality

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high quality seed with good germination. Certified seed is recommended to assure varietal purity, viability, and freedom from pathogens and weed seed.

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Table 2. Characteristics of flax varieties.

Variety	Origin -Year	Days to Flower	Seed Size	Color		Statewide Averages				Lodging	Disease Resistance	
				Flower	Seed	Oil %	Height (cm)	Yield (bu/A) 2004	Yield (bu/A) 3-yr	(1-9)*	Wilt	Rust
		-2-				-9-	-9-	-4-	-9-	-1-		
AC Carnduff	CAN-99	53	Small	Blue	Brown	40.3	53	34.4	27.2	1.1	MR	R
AC Emerson	CAN-95	51	Medium	Blue	Brown	39.4	52	32.2	25.2	1.3	R	R
AC Hanley	CAN-02	51	Small	Blue	Brown	38.8	49	32.0	24.6	2.3	MR	R
AC Watson	CAN-97	50	Med-Lg	Blue	Brown	40.5	52	33.9	26.4	1.2	MS	R
Carter	ND-04	51	Small	Blue	Yellow	39.9	52	32.3	25.4	0.8	MS	R
Cathay	ND-97	52	Medium	Blue	Brown	40.6	55	29.2	24.3	1.6	R	R
CDC Arras	CAN-00	54	Medium	Blue	Brown	40.5	54	34.6	27.0	0.8	R	R
CDC Bethume	CAN-00	52	Medium	Blue	Brown	40.4	52	34.6	26.7	1.6	MR	R
CDC Mons	CAN-03	53	Small	Blue	Brown	--	--	33.1	--	0.8	MR	R
CDC Normandy	CAN-96	51	Med-Sm	Blue	Brown	40.0	53	30.1	25.2	1.5	MR	R
CDC Valour	CAN-97	49	Medium	Blue	Brown	39.4	52	31.6	24.2	2.4	S	R
Linora	CAN-92	50	Med-Sm	Blue	Brown	40.6	53	34.0	27.2	1.5	MR	R
Linott	CAN-66	51	Med-Sm	Blue	Brown	40.3	56	31.3	25.2	0.8	MS	R
McGregor	CAN-82	54	Medium	Blue	Brown	39.3	53	30.3	24.6	1.2	MR	R
Nekoma	ND-02	51	Med-Sm	Blue	Brown	40.2	52	31.5	25.2	1.3	S	R
Omega	ND-90	51	Medium	Blue	Yellow	40.7	52	28.2	23.6	1.1	MS	R
Pembina	ND-97	51	Med-Sm	Blue	Brown	40.3	55	33.0	24.8	0.9	R	R
Prairie Blue	CAN-03	51	--	Blue	Brown	--	--	33.1	--	1.1	MR	R
Rahab 94	SD-94	51	Medium	Blue	Brown	40.9	51	32.5	26.2	1.2	MR	R
Selby	SD-00	52	Medium	Blue	Brown	40.7	56	32.6	26.1	1.0	MR	R
Verne 93	SD-93	49	Med-Sm	Blue	Brown	40.2	53	31.8	25.9	1.3	R	R
Webster	SD-98	54	Med-Sm	Blue	Brown	41.0	56	33.3	25.8	1.3	MR	R
York	ND-02	53	Medium	Blue	Brown	39.1	52	33.0	25.9	0.6	MR	R
Experimentals												
FP2112	CAN-exp.	--	Med-Lg	Blue	Brown	--	--	33.2	--	2.8	S	--
FP2114	CAN-exp.	--	Large	Blue	Brown	--	--	31.3	--	1.6	MR	--
FP2118	CAN-exp.	--	Med-Lg	Blue	Brown	--	--	32.1	--	1.8	R	--
FP2119	CAN-exp.	--	Medium	Blue	Brown	--	--	31.7	--	2.2	S	--
N2007	ND-exp.	--	--	Blue	Yellow	--	--	--	--	1.4	MS	--
N2010	ND-exp.	--	--	Blue	Brown	--	--	--	--	0.5	MR	--
N2014	ND-exp.	--	--	Blue	Brown	--	--	--	--	1.4	MR	--
N305	ND-exp.	--	--	Blue	Brown	--	--	--	--	1.2	--	--
N320	ND-exp.	--	--	Blue	Brown	--	--	--	--	1.2	--	--
N323	ND-exp.	--	--	Blue	Brown	--	--	--	--	0.5	--	--
N325	ND-exp.	--	--	Blue	Brown	--	--	--	--	1.3	--	--
Grand Mean		51				40.2	53	32.1	25.6	1.3		
LSD.05		ns				0.5	2	ns	2.5	ns		
C.V.		2.3				1.8	6.4	9.9	10.7	70.2		

* Lodging rated on a scale of 1 to 9, where 1=no lodging and 9=flat.

EC 909
Revised
Annually

Sunflower

2004 South Dakota Hybrid Performance Trials

Oilseed
Confection

Cooperative Extension Service • South Dakota State University • U.S. Department of Agriculture

List of Tables

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Sunflower

2004 South Dakota Hybrid Performance Trials

Oilseed and Confection

Kathleen Grady, oilseed breeder and Extension specialist
Lee Gilbertson, senior ag research technician
SDSU Plant Science Department

Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that a hybrid may or may not be the best yielder at all locations but that it ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical way to indicate if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Miller oilseed test (Table 6) could be repeated in 2005 exactly as it was in 2004, the yield ranking of a hybrid that yielded 2,806 lb/A and one that yielded 2,583 lb/A might change places since their yield difference (223 lb/A) is less than the indicated yield LSD value of 441 lb/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Miller in 2004. In contrast, a hybrid that yielded 2,316 lb/A at Miller in 2004 would likely be lower yielding than one that yielded 2,806 lb/A if the two hybrids were grown again under similar conditions, because the difference between them in 2004 (2806 – 2316 = 490 lb/A) exceeded the LSD value (441 lb/A).

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait and is expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15–20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding hybrids, select the one with the highest oil content. The oilseed market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun oleic levels. Consistency of oleic levels for particular hybrids will be an important trait to evaluate, as data become available.

Maturity

Full-season hybrids generally yield more than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20–25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease control is the planting of resistant or tolerant hybrids and a minimum of 4 years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and to two or more races of rust. Consult the seed company for information on the reaction of a particular hybrid to these and other diseases that may pose a risk in your growing area.

2004 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Ipswich, Kennebec, Miller, and Onida). Entries in the oilseed sunflower trials included traditional oil hybrids (linoleic) and NuSun (mid-oleic) hybrids. Non-oilseed (confection) sunflower trials were conducted at Kennebec, Miller, and Onida. Trial sites are indicated in Figure 1. Lists of hybrids planted at each site appear in Tables 2 and 3.

Climatic Conditions

A summary of 2004 climatic conditions near the sunflower test sites is presented in Table 1. The 2004 growing season (June–August) was cooler than normal at all locations. Moisture at planting was adequate for stand establishment. Precipitation was near to above normal in May, June, and September at all sites. Kennebec and Ipswich were drier than normal in August, but Miller and Onida were wetter than average. Most of the state received a killing frost during the first week of October, although lighter frosts in August and September damaged leaf tissue.

Experimental Methods

Plots at all locations consisted of four rows 23 or 24 feet long and spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was a randomized complete block design with four replications at each location. The experiments were randomized for a "nearest neighbors" statistical analysis, which removes effects of field trends (Crop Science 34: 62–66).

All plots were overseeded and thinned. Oilseed plots were thinned to a plant population of approximately 18,000 plants/acre. Confection plots at all locations were thinned to 16,000 plants/acre. Stands were fair to good at all locations except the first replication at Ipswich, where most of two ranges of the test was drowned out, and the first replication at Kennebec, where stands were poor for unknown reasons. Data from the first replication at both Ipswich and Kennebec were excluded from all statistical analyses.

Some individual hybrids had poor stands at all locations due to dormant seed. Some of the hybrids entered in the trials had seed that was pre-treated with Cruiser insecticide, while some were not. There was no major flea-beetle damage at any of the test sites.

The Kennebec and Onida trials were seeded no-till. Miller and Ipswich were planted with conventional tillage practices. Spartan herbicide was applied for weed control at Kennebec and Onida. Sonalan or Treflan were applied at all other locations.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Maturity at Onida was recorded as the number of days from planting to physiological maturity (backs of heads yellow and bracts turning brown). Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was light to moderate at Kennebec, Miller, and Ipswich, and moderate to severe at Onida. Plots at Ipswich and Kennebec had moderate bird damage.

Plots were harvested with a Gleaner Model K combine fitted with a two-row all row crop header. All oilseed trial seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis of oven-dry samples and converted to 10% moisture. Oil values for NuSun hybrids were adjusted for oleic acid content.

Seed from the non-oilseed trials was dried before weighing. A one-pint sub-sample of seed from each plot was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 4-8 (oilseed) and 9-12 (confection). The yield of 60 oilseed hybrids grown at Ipswich and Onida averaged 1,274 and 1,743 lb/A, respectively. Fifty-six hybrids grown at Kennebec averaged 1,615 lb/A, while 54 hybrids yielded an average of 2,151 lb/A at Miller. Confection seed yields averaged 1,599 lb/A at Kennebec, 1,843 lb/A at Miller, and 1,705 lb/A at Onida. In the tables that follow, hybrids are listed alphabetically according to brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

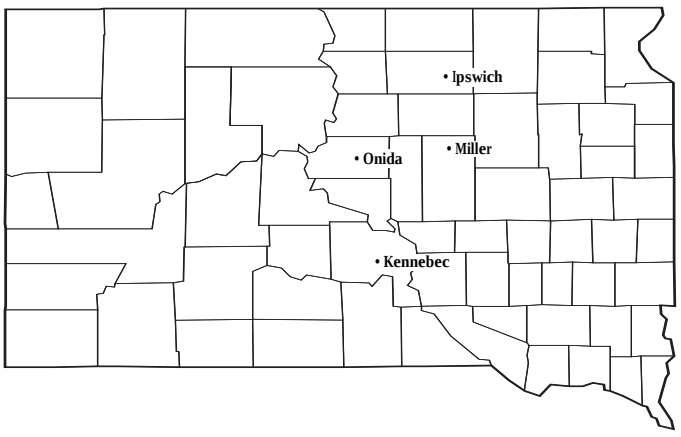

Figure 1. 2004 South Dakota sunflower trial locations.

Table 1. Climate summary for nearest weather stations to 2004 South Dakota sunflower test sites and departures from normal.

LOCATION-	2004 TEMPERATURE			TOTAL	DEPARTURE FROM NORMAL^			
MONTH	AVG MAX.	AVG MIN.	MEAN	PRECIP	MAX TEMP	MIN TEMP	AVG TEMP	PRECIP
	----------°F----------			IN.	----------°F----------			IN.
Kennebec*								
May	75.1	46.6	60.8	2.60	1.1	0.5	0.7	-0.4
June	79.2	51.6	65.4	4.52	-4.6	-4.4	-4.5	1.5
July	89.6	60.8	75.2	1.83	-1.2	-0.7	-1.0	-1.0
August	85.5	55.1	70.3	1.58	-4.1	-4.8	-4.5	-0.4
September	82.1	53.4	67.8	3.98	2.1	4.5	3.3	2.6
October	66.2	39.1	52.6	3.32	1.0	2.7	1.8	1.8
Ipswich*								
May	65.9	41.8	53.9	3.62	-3.9	0.5	-1.7	0.9
June	73.6	49.5	61.5	2.89	-4.9	-1.6	-3.3	-0.6
July	79.3	56.6	68.0	3.61	-5.4	0.5	-2.4	0.6
August	75.9	51.2	63.5	1.54	-7.1	-2.4	-4.8	-0.7
September	73.7	49.0	61.3	3.39	0.7	6.0	3.3	1.8
October	58.9	34.4	46.6	1.00	-0.6	3.1	1.2	-0.5
Miller*								
May	67.7	43.5	55.6	3.06	-0.7	-2.0	-1.4	-0.1
June	74.8	50.1	62.5	4.63	-3.4	-5.2	-4.3	1.7
July	82.2	58.9	70.5	5.19	-2.9	-1.7	-2.4	2.6
August	77.8	54.1	65.9	2.98	-5.9	-3.7	-4.9	1.0
September	77.6	51.9	64.8	4.46	3.5	4.4	4.0	2.7
October	60.4	37.5	49.0	3.80	-0.3	2.6	1.2	2.0
Onida 4 NW*								
May	71.2	44.3	57.7	3.70	0.8	0.0	0.3	0.9
June	75.6	49.5	62.6	3.22	-4.6	-4.1	-4.4	0.1
July	84.3	57.9	71.1	2.71	-3.3	-0.9	-2.1	0.0
August	79.6	53.5	66.5	3.50	-6.2	-3.5	-4.9	1.4
September	76.5	50.8	63.7	3.50	0.5	4.5	2.5	2.0
October	62.1	37.0	49.6	2.84	0.9	2.5	1.7	1.3

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2004 observations to 30-yr averages (1971-2000) for each site.

Table 2. Hybrids tested in the 2004 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Type	Ipswich	Ken-nebec	Miller	Onida
Croplan Genetics	340	High Oleic	X			
Croplan Genetics	345	NuSun	X		X	X
Croplan Genetics	380	NuSun	X	X	X	
Croplan Genetics	385	NuSun	X	X	X	X
Croplan Genetics	3080 DMR	NuSun	X		X	
Croplan Genetics	544 CL	NuSun	X	X		
Dahlgren & Co.	4421	NuSun	X		X	X
Dekalb	DKF30-33NS	NuSun	X	X	X	X
Dekalb	DKF33-33NS	NuSun	X	X	X	X
Dekalb	DKF38-30NS	NuSun	X	X	X	X
Dekalb	DKF38-80CL	Trad.	X	X	X	X
Dekalb	EXP35-10NS	NuSun	X	X	X	X
Dekalb	MH4231	NuSun	X	X	X	X
Dekalb	MH4233	NuSun	X	X	X	X
Dekalb	MH4433	NuSun	X	X	X	X
DenBesten Seed	DB 764	Trad.		X	X	X
DenBesten Seed	DB 845NS	NuSun	X	X	X	X
DenBesten Seed	DB 848NS	NuSun	X	X	X	X
Fontanelle Hybrids	920NS	NuSun		X		X
Garst/Interstate	4049	Trad.	X	X	X	X
Garst/Interstate	4704NS (F10002)	NuSun	X	X	X	X
Garst/Interstate	F10016 NS	NuSun	X	X	X	X
Garst/Interstate	Hysun 424	NuSun	X	X	X	X
Garst/Interstate	Hysun 450	NuSun	X	X	X	X
Garst/Interstate	Hysun 454	NuSun	X	X	X	X
Garst/Interstate	Hysun 525	NuSun	X	X	X	X
Kaystar	8300	Trad.	X			
Kaystar	9404	Trad.	X	X	X	X
Kaystar	9501	Trad.		X	X	X
Kaystar	2020NS	NuSun		X		X
Kaystar	8330NS	NuSun	X			
Kaystar	XF4001	Trad.		X		X
Legend Seeds	LSF 119N	NuSun	X	X	X	X
Legend Seeds	LSF 121N	NuSun	X	X	X	X
Legend Seeds	LSF 126N	NuSun	X	X	X	X
Legend Seeds	LSF 142N	NuSun	X	X	X	X
Mycogen Seeds	8377NS	NuSun	X			X
Mycogen Seeds	8488NS	NuSun	X	X	X	X
Mycogen Seeds	8D310	NuSun	X	X	X	X
Mycogen Seeds	8N352	NuSun	X	X	X	X
Mycogen Seeds	8N421	NuSun	X	X	X	X
Mycogen Seeds	8N510	NuSun	X	X	X	X
Mycogen Seeds	SF187	Trad.	X	X	X	X
Pioneer	hybrid 63M80	NuSun	X	X	X	X
Pioneer	hybrid 63M91	NuSun	X	X	X	X
Producers Hybrids	EX10104	NuSun	X	X	X	X
Producers Hybrids	EX10204	NuSun	X	X	X	X
Producers Hybrids	SF7303	NuSun	X	X	X	X
Proseed	9405	NuSun	X	X	X	X
Proseed	9441	NuSun	X	X	X	X

Table 2. Hybrids tested in the 2004 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Type	Ipswich	Ken-nebec	Miller	Onida
Proseed	CL55-15	NuSun	X	X	X	X
Proseed	Exp 15	NuSun	X	X	X	X
Proseed	Exp T1	NuSun	X	X	X	X
Proseed	Exp T2	NuSun	X	X	X	X
Proseed	Exp T3	NuSun	X	X	X	X
Seeds 2000	Blazer	NuSun	X	X	X	X
Seeds 2000	Charger (X926)	NuSun (CL)	X	X	X	X
Seeds 2000	X978	NuSun (CL)	X	X	X	X
Triumph Seed	636	NuSun	X	X	X	X
Triumph Seed	645	NuSun	X	X	X	X
Triumph Seed	658	NuSun				X
Triumph Seed	665	NuSun				X
Triumph Seed	s667	NuSun	X	X		X
Triumph Seed	s675 (TRX2446)	NuSun	X	X	X	X
Triumph Seed	TRX4342CL	NuSun	X			
USDA	894 (check)	Trad.	X	X	X	X
USDA	cmsHA406/RHA373(chk)	Trad.	X			X
		Total hybrids	60	56	54	60

Table 3. Hybrids tested in the 2004 South Dakota confection hybrid sunflower trials.

Brand	Hybrid	Type	Ken-nebec	Miller	Onida
CHS Sunflower	04-EXP01	Confect.	X	X	X
CHS Sunflower	04-EXP02	Confect.	X	X	X
CHS Sunflower	RH 118	Confect.	X	X	X
Croplan Genetics	135	Confect.		X	
Dahlgren & Co.	9518	Confect.		X	X
Dahlgren & Co.	9530	Confect.		X	X
Garst/Interstate	8048	Confect.	X	X	X
Garst/Interstate	8089	Confect.	X	X	X
Mycogen Seeds	8C416	Confect.	X	X	X
Producers Hybrids	SF7203	Oilseed	X	X	X
Red River Commod.	RR 2214	Confect.			X
Red River Commod.	RR 2215	Confect.			X
Red River Commod.	RR 7015	Confect.			X
Seeds 2000	Grizzly	Confect.		X	X
Seeds 2000	X3670	Confect.		X	X
Sigco Sun Products	Goliath RT	Confect.	X	X	X
Sigco Sun Products	SS3638	Confect.		X	X
Sigco Sun Products	SS3938	Confect.		X	X
Triumph Seed	707CLS	Confect.		X	
Triumph Seed	757C	Confect.		X	
USDA	924 (check)	Confect.	X	X	X
	Total hybrids		9	18	18

Table 4. Oilseed sunflower hybrid yield trial, Ipswich, SD - 2004.

Sunflower Brand-Hybrid	Type	Seed Yield (lbs/A) 2004	2003	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000pl /A
Croplan Genetics 340	HO	1242	--	--	39.8	151	0	18.3	25.9	18.2
Croplan Genetics 345	NuSun	1473	2332	1903	42.6	165	0	14.3	29.0	18.2
Croplan Genetics 380	NuSun	1351	--	--	39.8	165	6	16.5	28.6	18.2
Croplan Genetics 385	NuSun	969	2396	1683	38.9	143	8	20.3	28.8	18.2
Croplan Genetics 3080 DMR	NuSun	1474	--	--	41.1	159	3	16.5	27.8	16.7
Croplan Genetics 544 CL	NuSun	1757	--	--	39.0	168	7	15.6	27.0	18.2
Dahlgren & Co. 4421	NuSun	1433	--	--	36.6	157	0	15.5	26.6	18.2
Dekalb DKF30-33NS	NuSun	1212	2238	1725	39.3	162	6	18.0	28.3	18.2
Dekalb DKF33-33NS	NuSun	920	2453	1686	39.4	154	3	16.4	26.8	18.2
Dekalb DKF38-30NS	NuSun	1356	2053	1704	40.2	156	3	16.6	26.5	18.2
Dekalb DKF38-80CL	Trad.	1360	2399	1879	40.1	151	0	15.8	26.7	18.2
Dekalb EXP35-10NS	NuSun	1102	--	--	39.1	159	0	17.7	27.3	18.2
Dekalb MH4231	NuSun	1410	--	--	40.2	161	0	14.7	28.3	18.2
Dekalb MH4233	NuSun	1523	--	--	40.8	153	1	17.0	27.4	18.2
Dekalb MH4433	NuSun	1106	--	--	39.0	155	20	22.2	26.8	18.2
DenBesten Seed DB 845NS	NuSun	1414	--	--	40.8	169	2	17.6	27.9	17.6
DenBesten Seed DB 848NS	NuSun	1799	--	--	39.9	161	4	14.9	27.1	18.2
Garst/Interstate 4049	Trad.	1348	2257	1803	41.3	171	5	15.7	28.5	18.2
Garst/Interstate 4704NS	NuSun	1160	--	--	37.5	141	0	17.9	25.6	18.2
Garst/Interstate F10016 NS	NuSun	875	--	--	39.6	138	0	21.3	26.5	18.2
Garst/Interstate Hysun 424	NuSun	887	--	--	39.0	158	10	21.5	25.3	18.2
Garst/Interstate Hysun 450	NuSun	1078	1630	1354	38.4	142	5	21.9	27.4	14.6
Garst/Interstate Hysun 454	NuSun	1304	--	--	39.3	167	3	18.7	28.4	18.2
Garst/Interstate Hysun 525	NuSun	1074	--	--	39.4	156	4	14.3	27.8	18.2
Kaystar 8300	Trad.	840	--	--	41.4	151	13	19.5	25.7	15.5
Kaystar 9404	Trad.	1239	--	--	39.6	165	5	13.4	27.2	18.2
Kaystar 8330NS	NuSun	963	2331	1647	38.9	141	0	18.8	26.6	16.7
Legend Seeds LSF 119N	NuSun	797	1803	1300	38.5	153	21	18.6	24.7	16.4
Legend Seeds LSF 121N	NuSun	1456	--	--	38.2	137	4	19.7	26.0	18.2
Legend Seeds LSF 126N	NuSun	1219	2212	1716	40.0	147	6	18.5	27.6	18.2
Legend Seeds LSF 142N	NuSun	1352	2156	1754	40.1	159	19	17.0	27.8	16.7
Mycogen Seeds 8377NS	NuSun	1630	2278	1954	40.6	153	4	18.3	27.7	18.2
Mycogen Seeds 8488NS	NuSun	1588	2004	1796	40.0	161	5	18.7	27.7	18.2
Mycogen Seeds 8D310	NuSun	1533	--	--	38.4	165	1	14.8	26.4	18.2
Mycogen Seeds 8N352	NuSun	1690	--	--	42.5	164	9	17.6	27.9	15.8
Mycogen Seeds 8N421	NuSun	1170	2278	1724	40.3	167	2	16.5	27.0	18.2
Mycogen Seeds 8N510	NuSun	1777	--	--	39.9	160	0	19.7	27.7	18.2
Mycogen Seeds SF187	Trad.	1277	1879	1578	39.9	142	2	16.3	27.7	18.2
Pioneer hybrid 63M80	NuSun	942	2224	1583	39.6	155	9	18.1	25.8	18.2
Pioneer hybrid 63M91	NuSun	1299	1747	1523	39.3	177	6	18.7	28.0	18.2
Producers Hybrids EX10104	NuSun	1043	--	--	39.2	172	13	17.0	28.1	16.7
Producers Hybrids EX10204	NuSun	1497	--	--	38.7	153	2	17.7	28.3	18.2
Producers Hybrids SF7303	NuSun	1527	--	--	39.2	138	0	20.8	27.0	15.5
Proseed 9405	NuSun	1372	1865	1619	40.8	153	6	21.1	25.7	18.2
Proseed 9441	NuSun	1048	2532	1790	39.3	149	0	19.0	26.3	15.5
Proseed CL55-15	NuSun	1454	1915	1684	39.0	144	5	16.7	28.0	14.6
Proseed Exp 15	NuSun	1220	1501	1361	40.2	157	16	17.2	26.8	18.2
Proseed Exp T1	NuSun	1351	--	--	40.9	145	6	19.9	24.3	18.2
Proseed Exp T2	NuSun	1030	--	--	40.1	161	42	21.4	25.1	18.2

Proseed Exp T3	NuSun	751	--	--	39.9	157	0	16.8	26.9	13.7
Seeds 2000 Blazer	NuSun	1465	2164	1814	40.8	159	0	16.9	26.4	18.2
Seeds 2000 Charger (X926)	NuSun	1099	1466	1283	39.7	165	3	14.7	25.9	18.2
Seeds 2000 X978	NuSun	1439	--	--	40.1	174	0	18.9	27.4	16.7
Triumph Seed 636	NuSun	997	--	--	40.1	147	48	21.8	24.9	18.2
Triumph Seed 645	NuSun	1382	--	--	41.7	162	18	18.6	26.9	18.2
Triumph Seed s667	NuSun	1418	2122	1770	41.1	123	10	19.6	27.0	15.5
Triumph Seed s675	NuSun	1413	--	--	40.6	108	11	18.8	26.3	18.2
Triumph Seed TRX4342CL	NuSun	1103	--	--	40.2	162	6	18.2	26.1	17.0
USDA 894 (check)	Trad.	1018	1555	1287	41.5	151	23	16.8	27.6	18.2
cmsHA406/RHA373 (chk)	Trad.	1395	1706	1550	40.7	155	19	19.8	27.2	15.3
Grand mean		1274	2074	1674	39.9	155	6	17.9	27.0	17.6
LSD 5%		391	592		1.3	13	11	2.5	2.0	ns
C.V.		19.0	17.6		2.0	5.4	109.6	8.7	4.5	10.3

Planted May 28, 2004. Harvested October 13, 2004.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Mark Volk, Ipswich, SD.

Table 5. Oilseed sunflower hybrid yield trial, Kennebec, SD - 2004.

Sunflower Brand-Hybrid	Type	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000pl /A
Croplan Genetics 380	NuSun	2016	39.2	163	4	12.2	28.4	18.2
Croplan Genetics 385	NuSun	1854	40.6	148	3	12.8	26.2	18.2
Croplan Genetics 544 CL	NuSun	1383	40.0	165	5	12.5	27.9	17.9
Dekalb DKF30-33NS	NuSun	1553	38.4	161	3	14.6	28.0	14.5
Dekalb DKF33-33NS	NuSun	1564	38.0	157	2	13.0	27.1	15.7
Dekalb DKF38-30NS	NuSun	1729	40.2	161	8	13.4	26.6	18.2
Dekalb DKF38-80CL	Trad.	1872	40.7	149	2	12.5	27.5	17.9
Dekalb EXP35-10NS	NuSun	1469	39.8	163	2	12.4	26.5	16.7
Dekalb MH4231	NuSun	1846	40.1	159	0	13.0	28.1	18.2
Dekalb MH4233	NuSun	1676	41.0	152	5	12.9	27.7	17.6
Dekalb MH4433	NuSun	1067	41.6	165	2	12.5	27.4	18.2
DenBesten Seed DB 764	Trad.	2114	39.7	166	3	12.8	27.3	18.2
DenBesten Seed DB 845NS	NuSun	1940	40.5	163	3	12.5	28.5	17.6
DenBesten Seed DB 848NS	NuSun	1408	41.7	169	0	12.2	26.9	17.0
Fontanelle 920NS	NuSun	1707	41.3	163	6	12.7	26.3	18.2
Garst/Interstate 4049	Trad.	2018	40.6	169	0	12.0	26.8	16.7
Garst/Interstate 4704NS	NuSun	1260	38.7	152	1	12.7	24.7	17.9
Garst/Interstate F10016 NS	NuSun	1433	39.4	134	2	12.8	26.4	15.4
Garst/Interstate Hysun 424	NuSun	1577	39.0	155	6	12.4	26.9	14.6
Garst/Interstate Hysun 450	NuSun	1695	38.9	147	1	12.9	26.9	14.5
Garst/Interstate Hysun 454	NuSun	1611	40.1	164	6	12.5	27.7	18.2
Garst/Interstate Hysun 525	NuSun	1707	38.7	151	3	12.6	27.3	16.7
Kaystar 9404	Trad.	1721	40.0	158	0	12.2	27.7	17.3
Kaystar 9501	Trad.	1930	39.0	170	3	12.6	27.9	18.2
Kaystar 2020NS	NuSun	1889	39.8	152	9	12.9	27.6	18.2
Kaystar XF4001	Trad.	1338	39.9	154	6	12.5	27.2	18.2
Legend Seeds LSF 119N	NuSun	1489	38.9	160	2	12.5	26.0	16.7
Legend Seeds LSF 121N	NuSun	825	39.8	150	2	12.1	27.4	18.2
Legend Seeds LSF 126N	NuSun	1580	37.6	160	0	12.4	27.7	16.7
Legend Seeds LSF 142N	NuSun	1611	39.5	144	8	12.9	25.5	16.0
Mycogen Seeds 8488NS	NuSun	2091	40.9	163	5	11.9	27.1	17.3
Mycogen Seeds 8D310	NuSun	1522	37.7	163	2	12.5	26.2	17.6
Mycogen Seeds 8N352	NuSun	1595	41.4	155	4	12.5	28.6	16.9
Mycogen Seeds 8N421	NuSun	2584	40.9	161	2	12.5	26.9	16.0
Mycogen Seeds 8N510	NuSun	2223	40.2	155	0	12.4	26.5	18.2
Mycogen Seeds SF187	Trad.	2015	40.3	145	4	12.6	28.4	18.2
Pioneer hybrid 63M80	NuSun	1659	40.1	162	1	12.7	26.7	17.9
Pioneer hybrid 63M91	NuSun	461	39.3	164	2	12.7	26.3	17.3
Producers Hybrids EX10104	NuSun	1764	38.9	161	5	12.5	26.8	17.3
Producers Hybrids EX10204	NuSun	1096	38.5	136	0	12.9	29.0	17.3
Producers Hybrids SF7303	NuSun	2041	39.5	147	5	12.7	26.2	17.9
Proseed 9405	NuSun	1464	39.9	150	1	13.1	25.6	16.9
Proseed 9441	NuSun	1633	40.3	171	1	12.7	28.2	16.9
Proseed CL55-15	NuSun	794	38.9	149	4	12.4	24.9	18.2
Proseed Exp 15	NuSun	1352	39.8	158	4	12.4	26.9	17.3
Proseed Exp T1	NuSun	1845	40.8	154	7	12.6	25.9	17.6
Proseed Exp T2	NuSun	1283	40.4	163	2	13.1	24.8	14.9
Proseed Exp T3	NuSun	1419	39.7	168	2	12.8	26.8	16.7
Seeds 2000 Blazer	NuSun	1506	39.7	150	5	12.7	27.6	15.2
Seeds 2000 Charger (X926)	NuSun	1642	38.5	165	2	12.6	27.0	18.2
Seeds 2000 X978	NuSun	1864	41.0	165	0	12.6	28.8	18.2
Triumph Seed 636	NuSun	1425	39.9	159	3	12.5	26.9	18.2
Triumph Seed 645	NuSun	1722	41.7	161	1	12.9	26.9	17.9
Triumph Seed s667	NuSun	1598	42.0	125	10	12.5	26.7	18.2
Triumph Seed s675	NuSun	1480	43.2	109	5	12.9	27.5	18.2
USDA 894 (check)	Trad.	1506	41.6	160	7	12.5	27.7	16.7
Grand mean		1615	40.0	156	3	12.7	27.1	17.3
LSD 5%		406	1.4	10	ns	0.8	1.6	ns
C.V.		12.5	2.1	4.7	118.5	4.0	3.7	10.7

Planted June 2, 2004. Harvested October 18, 2004.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Carl Brakke, Presho, SD.

Table 6. Oilseed sunflower hybrid yield trial, Miller, SD - 2004.

Sunflower Brand-Hybrid	Type	Seed Yield (lbs/A) 2004	2003	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000pl /A
Croplan Genetics 345	NuSun	2347	1815	2081	40.1	141	0	12.9	28.3	18.2
Croplan Genetics 380	NuSun	2233	--	--	40.6	140	5	13.5	31.3	18.2
Croplan Genetics 385	NuSun	2367	1676	2022	41.8	130	8	14.2	29.0	18.2
Croplan Genetics 3080 DMR	NuSun	2060	--	--	41.6	136	6	11.7	28.1	18.2
Dahlgren & Co. 4421	NuSun	2300	--	--	39.6	138	4	12.9	29.4	18.2
Dekalb DKF30-33NS	NuSun	2583	1725	2154	40.2	129	1	13.0	30.5	18.0
Dekalb DKF33-33NS	NuSun	2012	1717	1865	40.7	139	15	12.2	30.1	18.2
Dekalb DKF38-30NS	NuSun	2399	1812	2106	41.6	141	1	13.7	30.1	18.2
Dekalb DKF38-80CL	Trad.	2031	1794	1912	42.3	137	10	13.1	28.9	17.1
Dekalb EXP35-10NS	NuSun	1992	--	--	41.0	143	3	13.7	29.6	18.2
Dekalb MH4231	NuSun	2533	--	--	41.6	135	7	12.9	28.7	18.2
Dekalb MH4233	NuSun	2207	--	--	40.7	139	7	12.7	29.3	18.2
Dekalb MH4433	NuSun	1829	--	--	41.5	141	10	13.4	29.7	18.2
DenBesten Seed DB 764	Trad.	2120	--	--	40.5	142	5	12.5	29.2	18.2
DenBesten Seed DB 845NS	NuSun	2238	--	--	42.5	143	4	12.7	29.8	16.6
DenBesten Seed DB 848NS	NuSun	2385	--	--	41.0	142	2	14.0	29.1	18.2
Garst/Interstate 4049	Trad.	2207	1812	2010	43.5	139	4	12.7	28.4	18.2
Garst/Interstate 4704NS	NuSun	2241	--	--	39.8	129	6	13.5	29.9	18.2
Garst/Interstate F10016 NS	NuSun	2226	--	--	41.2	128	3	13.4	29.2	17.7
Garst/Interstate Hysun 424	NuSun	1910	--	--	41.2	137	8	13.6	28.8	18.2
Garst/Interstate Hysun 450	NuSun	2146	1983	2065	40.3	122	6	14.5	29.7	18.2
Garst/Interstate Hysun 454	NuSun	2477	--	--	41.1	141	5	14.6	27.7	17.5
Garst/Interstate Hysun 525	NuSun	2115	--	--	40.7	126	5	12.7	29.4	18.2
Kaystar 9404	Trad.	2372	--	--	40.4	144	7	12.7	28.1	18.2
Kaystar 9501	Trad.	2168	2115	2141	41.2	140	6	13.7	29.3	18.2
Legend Seeds LSF 119N	NuSun	1278	1796	1537	40.6	127	17	14.3	28.5	18.2
Legend Seeds LSF 121N	NuSun	2256	--	--	41.0	126	6	13.0	29.1	18.2
Legend Seeds LSF 126N	NuSun	2020	1915	1968	39.1	124	3	13.4	29.0	18.2
Legend Seeds LSF 142N	NuSun	2734	2037	2385	42.3	131	3	14.9	28.6	18.2
Mycogen Seeds 8488NS	NuSun	2316	1617	1967	42.3	137	5	13.6	30.3	18.2
Mycogen Seeds 8D310	NuSun	2435	--	--	40.8	144	4	12.2	28.1	18.2
Mycogen Seeds 8N352	NuSun	1855	--	--	40.1	129	5	12.7	29.7	18.2
Mycogen Seeds 8N421	NuSun	2241	2049	2145	41.3	136	4	13.0	29.0	18.2
Mycogen Seeds 8N510	NuSun	2806	--	--	40.5	129	2	13.7	29.5	18.2
Mycogen Seeds SF187	Trad.	2293	2052	2173	42.1	112	2	13.5	28.7	18.2
Pioneer hybrid 63M80	NuSun	2161	2213	2187	41.8	132	6	12.8	28.4	18.2
Pioneer hybrid 63M91	NuSun	2264	1893	2078	41.6	138	6	13.7	29.2	18.2
Producers Hybrids EX10104	NuSun	1982	--	--	40.1	130	4	13.7	28.1	18.2
Producers Hybrids EX10204	NuSun	2194	--	--	40.3	121	8	13.5	30.4	17.7
Producers Hybrids SF7303	NuSun	2245	--	--	41.8	119	4	15.1	28.6	16.8
Proseed 9405	NuSun	2117	1819	1968	41.1	123	8	13.9	28.9	18.2
Proseed 9441	NuSun	1765	2229	1997	40.6	129	8	14.4	27.9	12.7
Proseed CL55-15	NuSun	1476	1562	1519	41.0	119	6	13.0	28.1	15.9
Proseed Exp 15	NuSun	2023	1563	1793	40.5	136	14	12.8	28.1	18.2
Proseed Exp T1	NuSun	2015	--	--	42.3	126	29	16.0	27.9	18.2
Proseed Exp T2	NuSun	1918	--	--	42.2	137	19	14.6	26.5	17.7
Proseed Exp T3	NuSun	1343	--	--	40.8	135	14	14.2	27.9	9.5
Seeds 2000 Blazer	NuSun	2338	1745	2042	41.4	117	5	13.0	28.3	18.2
Seeds 2000 Charger (X926)	NuSun	1895	1956	1925	40.5	140	5	12.9	28.9	18.2
Seeds 2000 X978	NuSun	2099	--	--	41.2	140	11	14.9	29.5	18.2
Triumph Seed 636	NuSun	1958	--	--	41.2	144	7	14.0	26.4	17.7
Triumph Seed 645	NuSun	2239	--	--	42.5	133	8	14.4	28.2	18.2
Triumph Seed s675	NuSun	2535	--	--	42.6	98	3	17.2	28.9	18.2
USDA 894 (check)	Trad.	1834	1387	1611	43.3	131	16	12.4	28.5	18.2
Grand mean		2151	1878	2015	41.2	133	7	13.5	28.9	17.8
LSD 5%		441	411		1.8	9	6	1.3	1.5	1.6
C.V.		14.7	15.7		3.1	5.1	62.7	7.0	3.7	6.5

Planted June 4, 2004. Harvested October 15, 2004.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Kelvin Grey, St. Lawrence, SD.

Table 7. Oilseed sunflower hybrid yield trial, Onida, SD - 2004.

Sunflower Brand-Hybrid	Type	Seed Yield (lbs/A) 2004	2003	2-yr	Oil %	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000pl /A	Hulling Quality Test
Croplan Genetics 345	NuSun	1947	1761	1854	41.6	69	112	161	0	16.8	26.7	18.2	NT
Croplan Genetics 385	NuSun	1959	1720	1840	41.6	77	121	149	3	19.3	25.9	18.2	NT
Dahlgren & Co. 4421	NuSun	2141	--	--	39.1	72	111	164	7	17.0	26.0	18.2	Excel.
Dekalb DKF30-33NS	NuSun	1624	1695	1659	40.4	72	117	157	8	17.0	25.8	18.2	Excel.
Dekalb DKF33-33NS	NuSun	1579	1390	1485	40.1	69	114	153	15	17.1	26.2	18.2	Excel.
Dekalb DKF38-30NS	NuSun	1927	2018	1972	40.4	76	120	157	20	19.7	26.4	18.2	Excel.
Dekalb DKF38-80CL	Trad.	1699	--	--	40.5	72	114	141	18	16.8	25.6	17.3	Excel.
Dekalb EXP35-10NS	NuSun	1545	--	--	40.8	72	118	155	0	17.6	26.0	18.2	Excel.
Dekalb MH4231	NuSun	1777	--	--	41.9	72	118	159	2	18.2	26.0	17.7	Excel.
Dekalb MH4233	NuSun	1808	--	--	42.7	71	118	158	0	17.9	25.7	18.2	Excel.
Dekalb MH4433	NuSun	1545	--	--	40.9	76	119	165	4	17.9	26.6	18.2	Excel.
DenBesten Seed DB 764	Trad.	1766	--	--	39.8	75	120	162	18	17.3	26.2	18.2	NT
DenBesten Seed DB 845NS	NuSun	2083	--	--	40.8	71	115	162	4	17.6	26.9	17.1	NT
DenBesten Seed DB 848NS	NuSun	2016	--	--	40.5	75	118	163	0	18.0	26.0	18.2	NT
Fontanelle 920NS	NuSun	1481	--	--	41.9	74	120	149	56	17.6	24.1	18.2	NT
Garst/Interstate 4049	Trad.	2037	--	--	42.2	74	116	167	7	17.0	25.0	18.2	NT
Garst/Interstate 4704NS	NuSun	1553	--	--	39.4	70	115	153	12	17.7	24.7	18.2	NT
Garst/Interstate F10016 NS	NuSun	1962	1776	1869	41.0	71	108	141	2	17.3	27.3	17.1	NT
Garst/Interstate Hysun 424	NuSun	2070	1628	1849	41.2	76	115	159	6	17.7	26.5	17.5	NT
Garst/Interstate Hysun 450	NuSun	2045	2006	2025	40.9	77	121	155	6	18.9	26.1	18.2	NT
Garst/Interstate Hysun 454	NuSun	1608		--	41.1	72	115	162	7	17.4	25.6	18.2	NT
Garst/Interstate Hysun 525	NuSun	2070	1299	1685	39.5	75	116	152	10	17.8	25.8	18.2	NT
Kaystar 9404	Trad.	1626	--	--	40.5	70	115	153	10	17.6	25.6	17.7	NT
Kaystar 9501	Trad.	2261	--	--	40.1	76	119	169	7	18.0	25.6	18.2	NT
Kaystar 2020NS	NuSun	1896	--	--	40.5	76	120	146	0	18.6	25.6	18.2	NT
Kaystar XF4001	Trad.	1553	--	--	41.0	73	118	153	26	17.3	26.3	18.2	NT
Legend Seeds LSF 119N	NuSun	1022	1782	1402	39.8	73	113	161	44	17.1	25.1	18.2	Excel.
Legend Seeds LSF 121N	NuSun	1473	--	--	39.8	72	115	151	15	16.9	25.5	17.3	NT
Legend Seeds LSF 126N	NuSun	1637	1334	1485	40.1	74	115	154	10	17.6	26.2	18.2	Excel.
Legend Seeds LSF 142N	NuSun	2265	1730	1997	41.1	77	119	157	8	18.0	25.8	18.2	NT
Mycogen Seeds 8377NS	NuSun	1827	2031	1929	41.5	70	113	165	5	16.8	26.2	18.2	NT
Mycogen Seeds 8488NS	NuSun	1985	1884	1934	40.9	74	122	163	2	17.8	25.8	18.2	NT
Mycogen Seeds 8D310	NuSun	1833	--	--	38.4	72	112	161	3	16.9	25.9	18.2	Excel.
Mycogen Seeds 8N352	NuSun	1797	--	--	42.4	73	123	159	16	17.9	26.0	18.2	NT
Mycogen Seeds 8N421	NuSun	2221	1826	2023	41.6	74	121	163	3	17.6	27.9	18.2	NT
Mycogen Seeds 8N510	NuSun	2082	--	--	40.2	77	122	162	9	18.4	25.6	18.0	NT
Mycogen Seeds SF187	Trad.	1983	2134	2058	39.9	73	113	157	9	17.9	25.2	18.2	Excel.
Pioneer hybrid 63M80	NuSun	1503	1827	1665	42.3	70	113	163	11	17.1	25.2	18.2	NT
Pioneer hybrid 63M91	NuSun	2220	1895	2057	41.0	69	113	167	10	17.2	26.8	18.2	NT
Producers Hybrids EX10104	NuSun	1372	--	--	39.6	73	117	160	15	18.0	25.4	18.2	NT
Producers Hybrids EX10204	NuSun	1919	--	--	40.7	68	114	153	19	17.5	26.7	18.2	NT
Producers Hybrids SF7303	NuSun	1978	--	--	41.1	77	119	148	3	19.9	26.2	18.2	NT
Proseed 9405	NuSun	1579	1917	1748	41.4	73	116	160	3	18.3	25.2	17.1	NT
Proseed 9441	NuSun	825	1780	1303	40.3	74	116	137	47	17.7	24.5	13.6	NT
Proseed CL55-15	NuSun	1250	1627	1439	39.6	72	112	135	51	18.3	24.9	18.2	NT
Proseed Exp 15	NuSun	1280	1610	1445	40.5	70	109	156	29	16.8	25.4	16.9	Excel.
Proseed Exp T1	NuSun	1393	--	--	41.1	72	118	152	43	17.8	24.2	18.2	Excel.
Proseed Exp T2	NuSun	1255	--	--	42.2	76	122	147	31	18.2	24.1	17.1	Excel.
Proseed Exp T3	NuSun	1303	--	--	40.6	74	114	139	23	18.5	25.5	14.5	Excel.
Seeds 2000 Blazer	NuSun	1965	1514	1740	41.6	73	117	151	14	18.8	26.0	17.5	NT
Seeds 2000 Charger	NuSun	1562	1719	1640	39.9	73	116	160	8	18.1	25.4	18.2	NT
Seeds 2000 X978	NuSun	1626	--	--	40.8	76	119	163	29	18.4	26.4	18.2	NT
Triumph Seed 636	NuSun	1561	1908	1735	41.4	73	119	157	23	17.3	24.8	18.2	Excel.
Triumph Seed 645	NuSun	2020	1903	1962	41.1	74	120	155	13	18.6	24.6	18.2	Excel.
Triumph Seed 658	NuSun	1820	1821	1820	41.1	74	118	156	41	19.1	25.5	18.2	Excel.
Triumph Seed 665	NuSun	1413	1757	1585	40.6	76	117	156	29	17.7	25.2	18.2	NT
Triumph Seed s667	NuSun	1942	2171	2056	43.0	77	123	124	0	17.8	25.6	17.5	NT
Triumph Seed s675	NuSun	1899	--	--	41.0	79	124	112	0	17.6	24.0	18.2	NT
USDA 894 (check)	Trad.	1392	--	--	42.2	74	117	152	35	17.5	26.3	17.1	NT
cmsHA406/RHA373 (chk)	Trad.	1779	--	--	42.7	75	117	163	4	19.3	25.7	18.2	NT
Grand mean		1743	1745	1744	40.9	73	117	155	14	17.8	25.7	17.9	
LSD 5%		464	301		1.4	1	3	10	13	1.1	1.3	1.3	
C.V.		19.1	10.6		2.4	1.3	1.7	4.7	65.2	4.3	3.7	5.1	

Planted June 4, 2004. Harvested October 25, 2004.

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Hulling quality test: NT = not tested, Excel.= ≥65% of seed passes over a 14/64 screen, Good = ≥75% of seed passes over a 13/64 screen.

Cooperator: Van and Chris Huse, Onida, SD.

Table 8. Oilseed sunflower hybrid yield trial averaged over four locations - 2004.

Sunflower Brand-Hybrid	Type	Seed Yield (lbs/A) 2004 -4-	2003 -2-	2-yr -6-	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000pl /A
Croplan Genetics 385	NuSun	1787	1987	1854	40.7	143	5	16.7	27.5	18.2
Dekalb DKF30-33NS	NuSun	1743	1946	1811	39.6	152	4	15.7	28.2	17.2
Dekalb DKF33-33NS	NuSun	1519	2034	1690	39.6	151	9	14.7	27.6	17.6
Dekalb DKF38-30NS	NuSun	1852	1917	1874	40.6	154	8	15.9	27.4	18.2
Dekalb DKF38-80CL	Trad.	1740	2054	1845	40.9	144	7	14.6	27.2	17.6
Dekalb EXP35-10NS	NuSun	1527	--	--	40.2	155	0	15.4	27.4	17.8
Dekalb MH4231	NuSun	1891	--	--	41.0	154	2	14.7	27.8	18.1
Dekalb MH4233	NuSun	1803	--	--	41.3	150	3	15.1	27.5	18.1
Dekalb MH4433	NuSun	1387	--	--	40.8	157	9	16.5	27.6	18.2
DenBesten Seed DB 845NS	NuSun	1919	--	--	41.2	159	3	15.1	28.3	17.2
DenBesten Seed DB 848NS	NuSun	1902	--	--	40.8	159	1	14.8	27.3	17.9
Garst/Interstate 4049	Trad.	1903	2004	1937	41.9	162	3	14.4	27.2	17.8
Garst/Interstate 4704NS (F10002)	NuSun	1554	--	--	38.9	144	4	15.5	26.2	18.1
Garst/Interstate F10016 NS	NuSun	1624	--	--	40.3	135	1	16.2	27.4	17.1
Garst/Interstate Hysun 424	NuSun	1611	--	--	40.1	152	8	16.3	26.9	17.1
Garst/Interstate Hysun 450	NuSun	1741	1833	1772	39.6	141	4	17.1	27.5	16.4
Garst/Interstate Hysun 454	NuSun	1750	--	--	40.4	159	5	15.8	27.4	18.0
Garst/Interstate Hysun 525	NuSun	1741	--	--	39.6	146	6	14.4	27.6	17.8
Kaystar 9404	Trad.	1740	--	--	40.1	155	5	14.0	27.2	17.9
Legend Seeds LSF 119N	NuSun	1147	1801	1365	39.5	150	21	15.6	26.1	17.4
Legend Seeds LSF 121N	NuSun	1502	--	--	39.7	141	7	15.4	27.0	18.0
Legend Seeds LSF 126N	NuSun	1614	2044	1757	39.2	146	5	15.5	27.6	17.8
Legend Seeds LSF 142N	NuSun	1990	2089	2023	40.8	148	9	15.7	26.9	17.3
Mycogen Seeds 8488NS	NuSun	1995	1784	1925	41.0	156	4	15.5	27.7	18.0
Mycogen Seeds 8D310	NuSun	1831	--	--	38.8	158	2	14.1	26.7	18.1
Mycogen Seeds 8N352	NuSun	1734	--	--	41.6	152	9	15.2	28.1	17.3
Mycogen Seeds 8N421	NuSun	2054	2173	2093	41.0	157	3	14.9	27.7	17.7
Mycogen Seeds 8N510	NuSun	2222	--	--	40.2	151	2	16.1	27.3	18.2
Mycogen Seeds SF187	Trad.	1892	--	--	40.6	139	4	15.1	27.5	18.2
Pioneer Hi-Bred hybrid 63M80	NuSun	1566	2219	1784	41.0	153	7	15.2	26.5	18.1
Pioneer Hi-Bred hybrid 63M91	NuSun	1561	1832	1651	40.3	162	6	15.6	27.6	18.0
Producers Hybrids EX10104	NuSun	1540	--	--	39.5	156	9	15.3	27.1	17.6
Producers Hybrids EX10204	NuSun	1676	--	--	39.6	141	7	15.4	28.6	17.9
Producers Hybrids SF7303	NuSun	1948	--	--	40.4	138	3	17.1	27.0	17.1
Proseed 9405	NuSun	1633	1840	1702	40.8	146	4	16.6	26.4	17.6
Proseed 9441	NuSun	1318	2360	1665	40.1	147	13	16.0	26.7	14.7
Proseed CL55-15	NuSun	1244	1715	1401	39.6	137	16	15.1	26.5	16.7
Proseed Exp 15	NuSun	1469	--	--	40.3	152	16	14.8	26.8	17.7
Proseed Exp T1	NuSun	1651	--	--	41.3	144	21	16.6	25.6	18.1
Proseed Exp T2	NuSun	1371	--	--	41.2	152	23	16.8	25.1	17.0
Proseed Exp T3	NuSun	1204	--	--	40.3	150	8	15.6	26.8	13.6
Seeds 2000 Blazer	NuSun	1819	1926	1854	40.9	144	6	15.4	27.1	17.3
Seeds 2000 Charger (X926)	NuSun	1549	1748	1615	39.7	157	4	14.6	26.8	18.2
Seeds 2000 X978	NuSun	1757	--	--	40.8	160	10	16.2	28.0	17.8
Triumph Seed 636	NuSun	1485	--	--	40.7	152	21	16.4	25.8	18.1
Triumph Seed 645	NuSun	1841	--	--	41.8	153	10	16.1	26.7	18.1
Triumph Seed s675 (TRX2446)	NuSun	1832	--	--	41.9	107	5	16.6	26.7	18.2
USDA 894 (check)	Trad.	1437	1461	1445	42.2	148	20	14.8	27.5	17.6
Grand mean		1680	1964	1774	40.4	149	8	15.5	27.1	17.6
LSD 5%		350	364		0.9	8	11	1.6	1.0	1.3
C.V.		14.9	17.6		1.6	4.0	103.8	7.4	2.7	5.4

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 9. Confection hybrid sunflower trial, Kennebec, SD - 2004.

Sunflower Brand-Hybrid	Seed Yield (lbs/A) 2004 Kenn	2003 Pukw	2-yr	Plant Height cm	Lodging %	Test Wt. lb/bu	Pop. 1000pl /A	% Seed Over Screen 22/64	20/64	18/64	Nut-meat %
CHS Sunflower 04-EXP01	1455	--	--	174	4	23.4	12.3	49.2	68.9	79.6	48.9
CHS Sunflower 04-EXP02	1813	--	--	165	6	25.9	13.9	67.4	83.7	92.9	49.5
CHS Sunflower RH 118	1839	2181	2010	177	0	25.8	15.4	55.4	74.3	86.3	50.3
Garst/Interstate 8048	1368	1670	1519	171	0	27.6	14.8	45.7	64.2	76.2	51.2
Garst/Interstate 8089	1587	--	--	170	1	27.2	11.6	34.4	56.3	73.4	49.3
Mycogen Seeds 8C416	1539	--	--	171	3	25.1	13.0	51.4	73.3	82.6	52.9
Producers Hybrids SF7203**	1882	--	--	178	1	28.9	15.0	--	--	--	--
Sigco Sun Prod. Goliath RT	1381	1799	1590	165	3	25.3	15.5	49.8	71.5	83.9	50.4
USDA 924 (check)	1522	1977	1750	173	2	26.2	15.5	28.1	50.7	70.1	54.5
Grand mean	1599	1761	1680	172	2	26.2	14.1	45.6	65.9	78.7	50.9
LSD 5%	353	439		8	ns	2.5	ns	18.8	16.3	16.0	ns
C.V.	14.7	16.4		3.1	140.6	6.6	18.1	27.9	16.8	13.8	5.0

Planted June 2, 2004. Harvested October 20, 2004.
**Producers Hybrids SF7203 is an oilseed hybrid that was mistakenly entered into the confection trial.

Table 10. Confection hybrid sunflower trial, Miller, SD - 2004.

Sunflower Brand-Hybrid	Seed Yield (lbs/A) 2004	2003	2-yr	Lodging %	Test Wt. lb/bu	% Seed Over Screen 22/64	20/64	18/64	Nut-meat %
CHS Sunflower 04-EXP01	1836	--	--	6	23.8	56.1	78.8	89.3	50.5
CHS Sunflower 04-EXP02	1634	--	--	16	23.5	74.1	85.3	89.3	53.0
CHS Sunflower RH 118	2035	1874	1954	0	25.8	40.1	76.5	89.7	50.2
Croplan Genetics 135	1466	--	--	24	22.7	67.8	80.5	88.8	49.5
Dahlgren & Co. 9518	1813	--	--	3	23.2	57.7	82.1	93.3	52.9
Dahlgren & Co. 9530	2055	--	--	4	22.4	64.8	81.7	90.8	51.0
Garst/Interstate 8048	1960	1728	1844	3	24.2	58.2	77.2	88.2	51.1
Garst/Interstate 8089	2476	--	--	10	23.5	57.9	83.5	90.7	49.7
Mycogen Seeds 8C416	1658	--	--	13	21.8	56.1	76.3	87.6	51.0
Producers Hybrids SF7203**	2169	--	--	5	29.5	--	--	--	--
Seeds 2000 Grizzly	2031	1801	1916	4	23.4	54.0	75.0	88.3	49.3
Seeds 2000 X3670	1531	--	--	11	20.9	75.2	82.2	89.2	48.6
Sigco Sun Prod. Goliath RT	1901	1523	1712	0	23.9	66.0	79.4	89.5	49.7
Sigco Sun Prod. SS3638	1827	--	--	20	23.5	56.6	79.8	87.7	50.4
Sigco Sun Prod. SS3938	1992	--	--	0	23.7	61.2	83.4	93.3	47.8
Triumph Seed 707CLS	1785	--	--	15	21.2	61.5	77.4	87.6	50.3
Triumph Seed 757C	1365	1651	1508	39	22.7	71.0	80.6	90.5	50.7
USDA 924 (check)	1648	1520	1584	8	23.8	30.1	65.3	85.6	55.8
Grand mean	1843	1639	1741	10	23.5	57.0	76.1	86.1	50.7
LSD 5%	464	ns		10	2.1	12.0	8.4	6.8	3.0
C.V.	17.7	15.9		71.3	6.3	14.7	7.8	5.5	4.2

Planted June 4, 2004. Harvested October 18, 2004.
**Producers Hybrids SF7203 is an oilseed hybrid that was mistakenly entered into the confection trial.

Table 11. Confection hybrid sunflower trial, Onida, SD - 2004.

Sunflower	Seed Yield (lbs/A)			Plant Height	Days to		Lodg-ing	Test Wt.	Pop. 1000pl	% Seed Over Screen			Nut-meat
Brand-Hybrid	2004	2003	2-yr	cm	Flwr	Mat.	%	lb/bu	/A	22/64	20/64	18/64	%
CHS Sunflower 04-EXP01	1531	--	--	175	69	111	16	22.6	15.9	70.3	87.7	95.7	48.2
CHS Sunflower 04-EXP02	1499	--	--	165	73	120	15	23.3	15.7	68.1	85.6	93.4	45.9
CHS Sunflower RH 118	1614	--	--	171	77	119	6	24.3	15.9	61.8	85.6	94.8	44.6
Dahlgren & Co. 9518	2047	--	--	173	77	121	7	23.5	15.9	73.8	86.9	94.4	45.4
Dahlgren & Co. 9530	2088	--	--	163	76	115	5	23.2	15.0	64.3	83.1	89.9	48.1
Garst/Interstate 8048	1385	1899	1642	168	68	115	10	24.6	15.7	61.8	83.2	92.0	48.2
Garst/Interstate 8089	1685	--	--	176	76	124	16	25.2	15.0	55.7	79.9	88.4	52.7
Mycogen Seeds 8C416	1727	--	--	170	75	118	13	24.5	15.5	56.9	84.5	93.0	47.9
Producers Hybrids SF7203**	2061	--	--	172	74	117	9	26.2	15.9	--	--	--	--
Red River Commod RR 2214	1743	--	--	170	75	121	3	24.3	14.7	59.4	77.3	90.8	49.3
Red River Commod RR 2215	1544	2034	1789	170	77	119	10	21.2	15.9	63.6	88.9	91.6	44.9
Red River Commod RR 7015	1338	2142	1740	176	77	119	18	21.5	15.3	52.1	71.4	90.1	48.0
Seeds 2000 Grizzly	2167	2145	2156	174	78	124	2	23.6	15.9	63.1	85.4	95.3	47.4
Seeds 2000 X3670	1377	--	--	157	73	125	13	23.8	15.9	77.2	94.4	93.7	46.6
Sigco Sun Prod. Goliath RT	1593	--	--	166	77	125	4	22.4	14.1	59.1	79.2	90.4	44.5
Sigco Sun Prod. SS3638	1782	--	--	171	75	121	12	21.7	15.3	67.0	86.1	91.7	46.2
Sigco Sun Prod. SS3938	2009	--	--	165	70	112	5	23.9	15.5	55.1	78.1	90.6	52.4
USDA 924 (check)	1508	--	--	174	72	111	10	24.3	15.3	35.8	56.8	80.8	49.8
Grand mean	1705	2020	1863	170	74	119	10	23.6	15.5	59.9	80.1	89.5	47.6
LSD 5%	416	ns		8	1	4	6	2.6	ns	15.4	12.3	11.9	ns
C.V.	17.1	8.1		3.3	1.4	2.2	46.6	7.8	6.8	18.1	10.8	9.3	9.3

Planted June 4, 2004. Harvested November 2, 2004.
**Producers Hybrids SF7203 is an oilseed hybrid that was mistakenly entered into the confection trial.

Table 12. Confection hybrid sunflower trial averaged over Miller, Kennebec, and Onida - 2004.

Sunflower	Seed Yield (lbs/A)			Plant Height	Lodg-ing	Test Wt.	Pop. 1000pl	% Seed Over Screen			Nut-meat
	2004	2003	2-yr								
Brand-Hybrid	-3-	-2-	-5-	cm	%	lb/bu	/A	22/64	20/64	18/64	%
CHS Sunflower 04-EXP01	1595	--	--	175	8	23.3	14.1	58.4	78.4	88.2	49.2
CHS Sunflower 04-EXP02	1640	--	--	165	12	24.3	14.8	69.7	84.8	91.8	49.5
CHS Sunflower RH 118	1813	2026	1898	174	1	25.3	15.6	52.3	78.7	90.3	48.3
Garst/Interstate 8048	1558	1698	1614	170	4	25.5	15.3	55.1	74.8	85.4	50.2
Garst/Interstate 8089	1915	--	--	173	9	25.3	13.3	49.2	73.1	84.1	50.5
Mycogen Seeds 8C416	1624	--	--	170	9	23.8	14.3	54.7	78.0	87.7	50.6
Producers Hybrids SF7203**	2019	--	--	175	4	28.2	15.4	--	--	--	--
Sigco Sun Prod. Goliath RT	1626	1660	1640	166	1	23.9	14.8	58.2	76.6	87.9	48.2
USDA 924 (check)	1552	1747	1630	174	6	24.8	15.4	31.2	57.5	78.8	53.4
Grand mean	1705	1700	1703	171	6	25.0	14.8	50.6	71.4	82.6	50.0
LSD 5%	ns	597		6	6	1.9	ns	12.4	13.3	13.3	ns
C.V.	13.9	15.1		3.4	87.6	6.6	13.5	20.5	13.5	10.8	8.2

**Producers Hybrids SF7203 is an oilseed hybrid that was mistakenly entered into the confection trial.

Table 13. Fatty acid percentages for oilseed sunflower, Onida, SD - 2004.

Sunflower Brand-Hybrid	Type	Fatty Acids (%)			
		Oleic	Linoleic	Palmitic	Stearic
Dekalb DKF30-33NS	NuSun	51.8	37.2	4.52	4.10
Dekalb DKF33-33NS	NuSun	63.6	25.4	4.12	4.28
Dekalb DKF38-30NS	NuSun	77.8	12.6	3.56	3.64
Dekalb EXP35-10NS	NuSun	81.5	7.9	3.46	4.17
Dekalb MH4231	NuSun	34.8	53.4	5.27	4.09
Dekalb MH4233	NuSun	32.8	55.1	5.34	4.18
Dekalb MH4433	NuSun	60.4	28.6	4.45	4.16
Legend Seeds LSF 119N	NuSun	71.6	18.2	4.13	3.73
Legend Seeds LSF 121N	NuSun	47.4	38.8	5.29	4.66
Legend Seeds LSF 126N	NuSun	58.0	31.0	4.94	3.58
Legend Seeds LSF 142N	NuSun	59.8	26.6	4.09	6.44
Mycogen Seeds 8377NS	NuSun	59.0	30.3	4.50	3.02
Mycogen Seeds 8488NS	NuSun	61.3	28.2	4.48	3.88
Mycogen Seeds 8D310	NuSun	72.7	18.8	3.77	2.61
Mycogen Seeds 8N352	NuSun	67.0	23.0	4.25	3.66
Mycogen Seeds 8N421	NuSun	60.7	29.2	4.34	3.65
Mycogen Seeds 8N510	NuSun	62.1	27.0	4.31	3.50
Triumph Seed 636	NuSun	68.2	22.0	3.92	3.84
Triumph Seed 645	NuSun	69.6	20.4	3.58	3.99
Triumph Seed 658	NuSun	67.0	23.0	3.82	3.88
Triumph Seed 665	NuSun	67.0	23.2	4.18	3.17
Triumph Seed 667	NuSun	64.2	26.2	4.82	2.78
Triumph Seed s675	NuSun	64.0	26.2	4.30	3.37

EC 909
Revised
Annually

Sunflower

2005 South Dakota Hybrid Performance Trials

Oilseed

Confection

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List of Tables

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EC909-05: PDF December 2005

Sunflower

2005 South Dakota Hybrid Performance Trials
Oilseed and Confection

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SDSU Plant Science Department

Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that a hybrid may or may not be the best yielder at all locations. It does mean that the hybrid ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical way to indicate if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Miller oilseed test (Table 6) could be repeated in 2006 exactly as it was in 2005, the yield ranking of a hybrid that yielded 3425 lb/A and one that yielded 3027 lb/A might change places since their yield difference (398 lb/A) is less than the indicated yield LSD value of 473 lb/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Miller in 2005. In contrast, a hybrid that yielded 2805 lb/A at Miller in 2005 would likely be lower yielding than one that yielded 3425 lb/A if the two hybrids were grown again under similar conditions, because the difference between them in 2005 (3425 – 2805 = 620 lb/A) exceeded the LSD value of 473 lb/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait and is expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun oleic levels. Consistency of oleic levels for particular hybrids will be an important trait to evaluate, as data become available.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease control is the planting of resistant or tolerant hybrids and a minimum of 4 years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and two or more races of rust. Consult the seed company for information on the reaction of a particular hybrid to these and other diseases that may pose a risk in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2005 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Ipswich, Miller, Onida, and Reliance). Entries in the oilseed sunflower trials included traditional oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. Non-oilseed (confection) sunflower trials were conducted at Miller and Onida. Trial sites are indicated on the map in Figure 1. Lists of hybrids planted at each site appear in Tables 2 and 3.

Climate

A summary of 2005 climatic conditions near the sunflower test sites is presented in Table 1. May was cooler than normal at all locations. All locations except Bison had near to above normal temperatures for the remainder of the growing season. Bison was near normal in June, warmer than normal in July, September, and October, and cooler than normal in August. There was adequate moisture at planting for stand establishment. Bison, Miller, and Reliance had above normal precipitation for much of the growing season, while Onida was drier than normal and Ipswich was near normal. The first killing frost occurred around October 7 at Bison and Reliance, but was delayed until October 23 at Miller, Ipswich, and Onida.

Experimental Methods

Plots at all locations consisted of four rows 23 or 24 feet long, spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

All plots were overseeded and thinned, except Bison, which was not thinned. Oilseed plots were thinned to a plant population of approximately 18,000 plants/A. Confection plots at both locations were thinned to approximately 17,000 plants/A. Stands were good at Ipswich and Miller but somewhat variable at Bison, Reliance, and Onida.

Some of the hybrids entered in the trials had seed that was pretreated with an insecticide, fungicide, or both, while some were not treated. Seed treatments used on individual hybrids are listed in Tables 2 and 3. There was no major flea-beetle damage at any of the test sites.

The Reliance, Bison, and Onida trials were seeded no-till. Miller and Ipswich were planted with conventional tillage practices. Spartan, Prowl, or Sonalan herbicide was applied for weed control at all locations.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Maturity at Onida was recorded as the number of days from planting to physiological maturity (backs of heads yellow and bracts turning brown). Plant height and lodging notes were taken at all locations immediately before harvest. Lodging averaged less than 5% at all locations. Plots in the fourth replication at Reliance had moderate bird damage and were excluded from statistical analyses. The first two replications at Bison were also excluded, due to variable stands and stunting from unknown causes.

Plots were harvested with a Gleaner Model K combine fitted with a two-row all row crop header. All oilseed trial seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis of oven-dry samples and converted to 10% moisture. Oil values for NuSun hybrids were adjusted for oleic acid content.

Seed from the non-oilseed trials was dried before weighing. A one-pint sub-sample of seed from each plot was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 4-9 (oilseed) and 10-12 (confection). Yields of oilseed hybrids were highest at Miller and Ipswich, averaging 2812 and 2733 lb/A, respectively, over all hybrids tested. Confection seed yields averaged 1779 lb/A at Onida and 3301 lb/A at Miller. In the tables that follow, hybrids are listed in order of descending 2005 seed yield.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

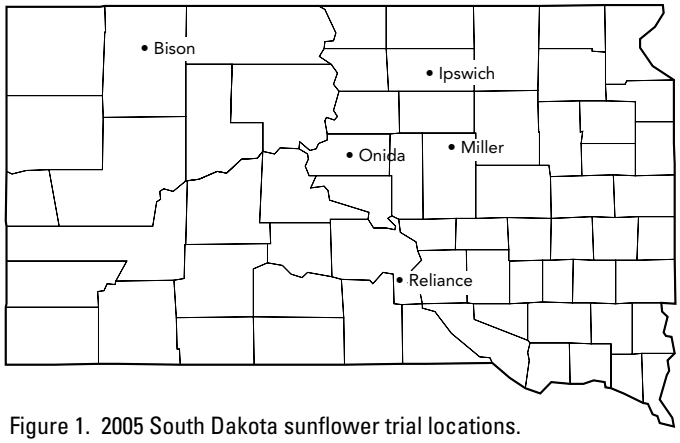

Figure 1. 2005 South Dakota sunflower trial locations.

Table 1. Climate summary for nearest weather stations to 2005 South Dakota sunflower test sites and departures from normal.

LOCATION-MONTH	2005 TEMPERATURE			TOTAL PRECIP	DEPARTURE FROM NORMAL^			
	AVG MAX.	AVG MIN.	MEAN		MAX TEMP	MIN	AVG TEMP	PRE-CIP
	----------°F----------			IN.	----------°F----------			IN.
Reliance*								
May	68	43	55	3.52	-3.0	-1.9	-2.4	-0.1
June	80	60	70	8.99	-1.1	5.8	2.3	5.6
July	91	63	77	0.92	1.8	2.8	2.3	-2.0
August	90	61	75	0.79	2.6	2.4	2.5	-1.5
September	85	55	70	2.85	7.2	6.5	6.8	0.9
October	67	37	52	0.50	4.0	1.1	2.5	-1.3
Ipswich*								
May	66	42	54	2.28	-3.7	0.8	-1.5	-0.4
June	78	58	68	5.96	-0.3	6.4	3.0	2.5
July	85	59	72	1.50	0.5	3.1	1.8	-1.5
August	82	55	69	3.02	-1.2	1.6	0.2	0.8
September	78	49	63	2.03	4.8	5.8	5.3	0.4
October	61	35	48	0.53	1.3	3.2	2.2	-1.0
Miller*								
May	66	43	55	2.87	-2.0	-3.0	-2.5	-0.3
June	78	57	68	7.95	0.2	2.1	1.1	5.1
July	87	61	74	1.73	1.5	0.1	0.7	-0.9
August	85	57	71	2.27	1.0	-0.7	0.1	0.3
September	80	53	66	2.89	5.5	5.2	5.3	1.1
October	63	36	50	0.60	2.6	1.1	1.8	-1.2
Onida 4 NW*								
May	66	42	54	3.82	-4.3	-2.2	-3.3	1.0
June	79	57	68	3.68	-1.4	3.8	1.2	0.6
July	91	60	76	1.42	3.6	1.6	2.6	-1.3
August	88	58	73	1.75	1.7	1.2	1.4	-0.4
September	83	51	67	1.03	7.1	5.1	6.1	-0.5
October	64	36	50	0.49	2.7	1.8	2.2	-1.1
Bison*								
May	65	40	53	5.32	-4.9	-3.3	-4.1	2.6
June	78	54	66	2.96	-0.8	0.9	0.0	0.1
July	90	57	74	3.26	4.2	-1.2	1.5	1.0
August	85	54	70	3.33	-1.6	-2.6	-2.1	1.9
September	81	48	65	1.11	6.3	1.8	4.0	-0.1
October	64	36	50	1.92	3.7	0.5	2.1	0.5

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2005 observations to 30-yr averages (1971-2000) for each site.

Table 2. Hybrids tested in the 2005 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Bison	Ipswich	Miller	Onida	Reliance
Advanta Pacific	AP534NS/CL	NuSun	CL	C		X	X		
Advanta Pacific	AP541NS	NuSun		C			X		
Advanta Pacific	AP561NS	NuSun		C			X		
Advanta Pacific	F10125CL	NuSun	CL			X	X		
Croplan Genetics	3080DMR	NuSun		CZ			X		
Croplan Genetics	340HO	HO		CZ				X	
Croplan Genetics	343HO,DMR	HO		CZ				X	
Croplan Genetics	345	NuSun		CZ		X		X	
Croplan Genetics	378DMR,HO	HO		CZ		X	X	X	X
Croplan Genetics	380	NuSun		CZ			X		X
Croplan Genetics	385	NuSun		CZ			X		X
Croplan Genetics	544CL	NuSun	CL	CZ		X	X		
Dahlgren & Co.	DO-4421	NuSun		yes			X	X	
Dahlgren & Co.	DO-4440	NuSun		yes			X	X	
Dahlgren & Co.	DO-4455CL	NuSun	CL	yes			X	X	
Dekalb	DKF30-33NS	NuSun		CDM	X	X	X	X	X
Dekalb	DKF33-33NS	NuSun		CDM	X	X		X	
Dekalb	DKF38-30NS	NuSun		CDM	X	X	X	X	X
Dekalb	DKF3875	Trad.		CDM	X	X	X	X	X
Dekalb	DKF38-80CL	Trad.	CL	CDM	X	X	X	X	X
Dekalb	DKF39-01	Trad.		CDM	X	X	X	X	X
Dekalb	EXP001	NuSun		CDM			X	X	X
Dekalb	EXP002	NuSun		CDM			X	X	X
Dekalb	MH4331B	NuSun		CDM	X	X	X	X	X
Dekalb	MH4435	NuSun		CDM	X	X		X	
Dekalb	MH4436	NuSun		CDM	X	X		X	
Dekalb	MH5330	NuSun		CDM	X	X		X	
Dekalb	MH5434	NuSun		CDM	X	X		X	
Dyna-Gro	91N05	NuSun				X	X	X	X
Dyna-Gro	93C05	Trad.				X	X	X	X
Dyna-Gro	93N05	NuSun				X	X	X	X
Dyna-Gro	94T90	Trad.				X	X	X	X
Garst Seed	02TH003896	NuSun				X	X	X	X
Garst Seed	03TH004205	NuSun				X	X	X	X
Garst Seed	03TH004251	NuSun				X	X	X	X
Garst Seed	4682 NC/CL	NuSun	CL			X	X	X	X
Garst Seed	4690 NS	NuSun				X	X	X	X
Interstate Seed	IS 4540NS	NuSun		C	X	X		X	
Interstate Seed	IS 4704NS	NuSun		C	X	X		X	
Interstate Seed	IS F10016	NuSun		C	X	X		X	
Interstate Seed	IS F10046	HO		C	X	X		X	
Interstate Seed	IS HyOleic 120	HO		C	X	X		X	
Interstate Seed	IS Hysun 424	NuSun		C	X	X		X	
Interstate Seed	IS Hysun 450	NuSun		C	X	X		X	
Interstate Seed	IS Hysun 525	NuSun		C	X	X		X	
Kaystar Seed	8303	Trad.		C	X	X			
Kaystar Seed	8402NS	NuSun		C		X			
Kaystar Seed	8550NS/CL	NuSun	CL	C			X		X
Kaystar Seed	9404	Trad.		C	X		X	X	
Kaystar Seed	9501	Trad.		C			X	X	X
Kaystar Seed	X5100HO	HO		C				X	

Table 2 (cont.).

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Bison	Ipswich	Miller	Onida	Reliance
Mycogen Seeds	8D310	NuSun		CDM		X	X	X	X
Mycogen Seeds	8H350DM	HO		CDM		X	X	X	X
Mycogen Seeds	8H419CL	HO	CL	CDM	X	X	X	X	X
Mycogen Seeds	8N352	NuSun		CDM	X	X	X	X	X
Mycogen Seeds	8N386CL	NuSun	CL	CDM		X	X	X	X
Mycogen Seeds	8N429CL	NuSun	CL		X	X		X	
Mycogen Seeds	8N453DM	NuSun		CDM		X	X	X	X
Mycogen Seeds	8N510	NuSun		CDM		X	X	X	X
Mycogen Seeds	E84352	NuSun	CL		X	X		X	
Mycogen Seeds	SF187	Trad.		CDM	X	X	X	X	X
Pannar Seeds	PEX 2413	NuSun					X	X	
Pannar Seeds	PEX 2424	NuSun					X	X	
Pioneer Hi-Bred	hybrid 63M80	NuSun		C+Dyn		X	X	X	X
Pioneer Hi-Bred	hybrid 63M91	NuSun		C+Dyn		X	X	X	X
Pioneer Hi-Bred	hybrid 64H41	HO		C+Dyn		X	X	X	X
Pioneer Hi-Bred	hybrid 64H45	HO		C+Dyn		X	X	X	X
Pioneer Hi-Bred	hybrid X3425	NuSun		C+Dyn		X	X	X	X
Producers Hybrids	SF7203	Trad.				X	X	X	X
Producers Hybrids	SF7303	NuSun				X	X	X	X
Proseed	9405	NuSun			X	X	X	X	X
Proseed	9441	NuSun			X	X	X	X	X
Proseed	E-2	Trad.			X	X	X	X	X
Proseed	E-3	NuSun			X	X	X	X	X
Proseed	CL 43	NuSun	CL		X	X	X	X	X
Proseed	CL55-15	NuSun	CL		X	X	X	X	X
Proseed	E-1	HO			X	X	X	X	X
Proseed	T-1	NuSun			X	X	X	X	X
Proseed	T-5	NuSun			X	X	X	X	X
Scherr's Seed LLC	629	NuSun	CL	Met		X			
Scherr's Seed LLC	630	NuSun	CL	Met		X			
Scherr's Seed LLC	674	NuSun		Met		X			
Seeds 2000	Blazer	NuSun		Max+Met		X	X	X	X
Seeds 2000	Sierra	HO		Max+Met		X	X	X	X
Seeds 2000	Barracuda	NuSun	CL	Max+Met		X	X	X	X
Triumph Seed	645	NuSun		C+Max+Met+Reldan	X	X	X	X	X
Triumph Seed	660CL	NuSun	CL	C+Max+Met+Reldan				X	
Triumph Seed	820HO	HO		C+Max+Met+Reldan				X	
Triumph Seed	s672	NuSun		C+Max+Met+Reldan	X	X	X	X	X
Triumph Seed	s675	NuSun		C+Max+Met+Reldan		X		X	
Triumph Seed	TR620CL	NuSun	CL	C+Max+Met+Reldan				X	
Triumph Seed	TRX4240	NuSun		C+Max+Met+Reldan				X	
Triumph Seed	s678	NuSun		C+Max+Met+Reldan				X	X
USDA	894 (check)	Trad.			X	X	X	X	X
cmsHA406/RHA373	(check)	Trad.				X			X
			Total hybrids		38	72	64	80	54

* C = Cruiser, CDM = Cruiser DM Pak, Max = Maxim, Met = Metalaxyl, Dyn = Dynasty

Table 3. Hybrids tested in the 2005 South Dakota confection hybrid sunflower trials.

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Miller	Onida
CHS Sunflower	RH112	Confect.		Apron/Maxim CDM	X	X
CHS Sunflower	RH312	Confect.		Apron/Maxim CDM	X	X
CHS Sunflower	RH316	Confect.		Apron/Maxim CDM	X	X
Croplan Genetics	130	Confect.		CZ	X	X
Croplan Genetics	135	Confect.		CZ	X	X
Dahlgren & Co.	D-9530	Confect.		yes	X	X
Dahlgren & Co.	D-9531	Confect.		yes	X	X
Garst Seed	IS8048	Confect.			X	X
Mycogen Seeds	8C416	Confect.		CDM	X	X
Mycogen Seeds	8C481	Confect.		CDM	X	X
Red River Commodities	2214	Confect.		CDM	X	X
Red River Commodities	2215	Confect.		CDM	X	X
Red River Commodities	2216	Confect.		CDM	X	X
Red River Commodities	8050	Confect.		CDM	X	X
Seeds 2000	Grizzly	Confect.			X	X
Seeds 2000	Panther	Confect.			X	X
Sigco Sun Products	SS3638	Confect.		Max+Met+C	X	X
Sigco Sun Products	SS3938	Confect.		Max+Met+C	X	X
Triumph Seed	777C	Confect.			X	(X)
Triumph Seed	767C	Confect.			X	
USDA	924 (check)	Confect.			X	X
				Total hybrids	21	20

* C = Cruiser, CDM = Cruiser DM Pak, Max = Maxim, Met = Metalaxyl

Table 4. Oilseed sunflower hybrid trial, Bison, SD - 2005.

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Pop. 1000 pl/A
Kaystar Seed	8303	Trad.	1786	41.4	121	6	11.8	17.8
Triumph Seed	s672	N	1752	41.8	93	8	15.6	18.2
Dekalb	DKF3875	Trad.	1684	37.3	109	2	11.5	18.5
Mycogen Seeds	SF187	Trad.	1670	37.0	113	1	8.4	20.9
Dekalb	DKF33-33NS	N	1669	37.1	118	-0	7.4	18.6
Proseed	T-5	N	1665	40.9	96	12	12.0	16.8
Proseed	T-1	N	1642	39.3	121	9	13.8	11.9
Mycogen Seeds	8N429CL	N,CL	1609	35.8	131	1	13.3	18.0
Proseed	E-3	N	1602	38.3	118	1	13.7	16.7
Dekalb	MH4435	N	1588	40.8	119	5	10.9	18.6
Interstate Seed	IS 4540NS	N	1560	39.2	100	7	12.5	19.3
Mycogen Seeds	8N352	N	1536	41.0	111	7	12.1	21.2
Proseed	9405	N	1518	40.2	125	3	13.0	17.7
Proseed	E-2	Trad.	1488	37.6	128	2	10.7	19.4
Interstate Seed	IS HyOleic 120	HO	1443	40.5	129	3	14.2	16.4
Interstate Seed	IS Hysun 450	N	1431	38.4	104	6	16.3	17.0
Interstate Seed	IS 4704NS	N	1419	37.6	105	-0	13.6	21.4
Dekalb	DKF30-33NS	N	1410	35.8	123	4	12.8	19.0
Kaystar Seed	9404	Trad.	1396	37.7	125	2	11.8	19.7
Proseed	CL 43	N,CL	1378	35.3	115	-0	8.1	14.3
Dekalb	DKF38-30NS	N	1360	39.7	114	4	14.5	19.7
Mycogen Seeds	E84352CL	N,CL	1357	42.0	113	5	10.6	18.8
Interstate Seed	IS Hysun 424	N	1309	39.0	118	1	14.3	17.4
Proseed	CL55-15	N,CL	1307	37.6	124	0	8.8	20.4
Dekalb	MH5330	N	1291	41.0	138	1	11.4	20.0
Dekalb	DKF38-80CL	Trad,CL	1278	34.8	113	4	11.3	17.5
Dekalb	DKF39-01	Trad.	1254	40.0	114	10	8.4	15.8
Interstate Seed	IS Hysun 525	N	1232	38.0	113	6	11.3	19.6
Triumph Seed	645	N	1139	41.3	125	12	12.6	19.3
Interstate Seed	IS F10016	N	1137	38.6	115	-0	12.5	20.7
Proseed	9441	N	1106	39.1	128	3	12.4	15.9
Mycogen Seeds	8H419CL	HO,CL	1082	38.8	118	7	11.1	19.1
Interstate Seed	IS F10046	HO	1077	38.8	110	6	18.5	15.4
Dekalb	MH5434	N	1036	41.5	133	6	11.3	19.5
Dekalb	MH4331B	N	1014	40.6	114	2	11.5	18.9
Dekalb	MH4436	N	946	40.2	121	9	4.8	19.6
Proseed	E-1	HO	863	38.6	127	2	10.5	13.8
USDA	894 (check)	Trad.	828	38.3	120	8	8.5	18.9
Grand mean			1365	39.0	118	4	11.8	18.2
LSD 5%			491	1.3	11	5	3.6	3.5
C.V.			17.7	2.4	6.5	82.0	22.0	13.9

* N = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield.

Planted June 15, 2005. Harvested October 21, 2005.

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Cooperator: Duane Shea, Bison, SD.

Table 5. Oilseed sunflower hybrid trial, Ipswich, SD - 2005.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Mycogen Seeds	8H350DM	HO	3718	--	--	42.0	139	2	15.2	29.5	18.2
Triumph Seed	s675	N	3606	1413	2509	41.9	98	1	18.1	28.6	18.2
Dekalb	MH4331B	N	3597	--	--	40.8	139	1	16.3	29.6	18.2
Dekalb	MH4435	N	3544	--	--	42.6	136	3	14.6	29.5	18.2
Triumph Seed	645	N	3526	1382	2454	40.9	136	2	15.5	28.9	18.2
Seeds 2000	Blazer	N	3334	1465	2399	41.6	127	1	15.7	29.8	18.2
Mycogen Seeds	SF187	Trad.	3306	1277	2291	41.2	128	0	15.3	30.2	18.2
Mycogen Seeds	8H419CL	HO,CL	3258	--	--	41.5	146	2	14.7	29.1	18.2
Mycogen Seeds	8N510	N	3226	1777	2502	40.2	142	2	14.4	29.7	18.2
Croplan Genetics	345	N	3199	1473	2336	41.7	140	2	17.3	29.2	18.2
Dekalb	DKF3875	Trad.	3169	--	--	41.4	144	1	14.4	31.1	18.2
Triumph Seed	s672	N	3134	--	--	43.5	102	-0	17.2	29.2	18.2
cmsHA406/RHA373	(check)	Trad.	3129	1395	2262	42.2	135	0	12.7	31.4	18.2
Mycogen Seeds	8N453DM	N	3093	--	--	42.0	145	2	16.4	30.4	18.2
Seeds 2000	Sierra	HO	3087	--	--	40.4	140	2	20.3	26.7	18.2
Interstate Seed	IS Hysun 525	N	3081	1074	2078	40.3	126	1	17.2	29.4	15.7
Scherr's Seed LLC	674	N	3071	--	--	41.3	130	2	16.8	29.9	18.2
Producers Hybrids	SF7303	N	3061	1527	2294	40.7	136	2	18.7	29.3	18.2
Mycogen Seeds	8D310	N	3061	1533	2297	38.9	137	1	16.7	28.9	18.2
Mycogen Seeds	8N352	N	3056	1690	2373	42.1	141	-0	16.2	29.9	18.2
Producers Hybrids	SF7203	Trad.	2943	--	--	42.2	147	4	14.2	29.6	18.2
Proseed	E-1	HO	2911	--	--	39.2	157	2	14.2	28.4	17.7
Dekalb	MH4436	N	2890	--	--	42.2	136	7	17.1	31.5	18.2
Garst Seed	4682 NC/CL	N,CL	2888	--	--	40.4	133	2	15.8	29.4	18.2
Dekalb	DKF30-33NS	N	2848	1212	2030	39.2	147	3	16.2	29.9	18.2
Interstate Seed	IS Hysun 450	N	2807	1078	1942	40.5	144	2	17.0	28.9	18.2
Mycogen Seeds	8N386CL	N,CL	2790	--	--	40.7	143	1	16.6	28.5	18.2
Advanta Pacific	F10125CL	N,CL	2789	--	--	39.2	146	2	15.7	29.7	18.2
Proseed	T-5	N	2787	--	--	39.7	138	1	17.3	28.6	16.3
Mycogen Seeds	E84352CL	N,CL	2774	--	--	41.3	140	0	13.0	29.5	18.2
Advanta Pacific	AP534NS/CL	N,CL	2771	--	--	39.9	152	2	17.4	28.4	18.2
Dekalb	MH5434	N	2740	--	--	39.6	155	3	16.7	29.8	18.2
Garst Seed	4690 NS	N	2722	--	--	41.0	114	3	16.6	30.7	18.2
Garst Seed	02TH003896	N	2720	--	--	40.9	149	8	17.3	30.8	18.2
Dekalb	DKF33-33NS	N	2712	920	1816	39.2	141	6	17.1	30.0	18.2
Proseed	9441	N	2697	1048	1873	40.4	146	3	14.3	28.9	18.2
Proseed	T-1	N	2691	1351	2021	41.0	129	5	17.6	27.8	18.2
Interstate Seed	IS F10046	HO	2662	--	--	42.2	130	3	16.9	30.9	18.2
Interstate Seed	IS Hysun 424	N	2659	887	1773	40.5	140	2	16.3	30.1	18.2
Kaystar Seed	8303	Trad.	2658	--	--	41.4	132	4	14.9	31.2	18.2
Dyna-Gro	94T90	Trad.	2657	--	--	42.0	148	4	14.2	29.7	18.2
Dekalb	DKF39-01	Trad.	2652	--	--	41.5	130	4	13.0	31.2	18.2
Croplan Genetics	378DMR,HO	HO	2646	--	--	40.2	142	1	16.2	28.6	18.2
Dekalb	MH5330	N	2635	--	--	40.8	158	0	15.8	30.1	18.2
Garst Seed	03TH004205	N	2606	--	--	39.6	146	13	17.7	29.0	18.2
Dekalb	DKF38-30NS	N	2590	1356	1973	40.3	146	1	17.2	29.7	18.2
Pioneer Hi-Bred	hybrid 64H45	HO	2575	--	--	41.4	146	2	17.4	29.3	18.2
Proseed	E-3	N	2566	--	--	40.2	134	4	14.5	29.9	18.2

Table 5 (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Interstate Seed	IS HyOleic 120	HO	2536	--	--	40.7	144	4	15.1	30.4	18.2
Interstate Seed	IS 4540NS	N	2534	--	--	41.3	126	1	17.1	30.2	18.2
Dyna-Gro	93C05	Trad.	2520	--	--	42.1	136	4	18.9	29.0	18.2
Garst Seed	03TH004251	N	2486	--	--	40.5	142	6	15.2	29.5	18.2
Mycogen Seeds	8N429CL	N,CL	2466	--	--	39.8	151	0	17.9	30.1	17.5
Pioneer Hi-Bred	hybrid 64H41	HO	2443	--	--	39.7	147	4	15.6	30.1	18.2
Pioneer Hi-Bred	hybrid 63M80	N	2426	942	1684	41.5	128	1	14.6	30.9	18.2
Interstate Seed	IS 4704NS	N	2385	1160	1773	40.1	127	0	20.0	27.9	18.2
Proseed	9405	N	2378	1372	1875	39.7	132	2	19.3	27.7	18.2
USDA	894 (check)	Trad.	2370	1018	1694	42.5	119	5	16.4	30.7	17.5
Dyna-Gro	93N05	N	2351	--	--	39.4	135	1	18.6	29.0	18.2
Pioneer Hi-Bred	hybrid 63M91	N	2348	1299	1824	40.7	148	2	15.0	31.3	18.2
Proseed	E-2	Trad.	2336	--	--	39.8	150	7	15.4	29.8	18.2
Dekalb	DKF38-80CL	Trad,CL	2321	1360	1841	40.2	131	2	15.6	28.7	18.2
Proseed	CL 43	N,CL	2301	--	--	39.3	132	11	16.9	29.3	18.2
Scherr's Seed LLC	630	N,CL	2300	--	--	41.0	147	5	20.8	27.9	18.2
Interstate Seed	IS F10016	N	2228	875	1552	39.8	119	1	18.6	29.1	18.2
Seeds 2000	Barracuda	N,CL	2203	1439	1821	41.4	142	5	19.2	28.7	18.2
Kaystar Seed	8402NS	N	2154	--	--	40.5	121	2	21.3	28.7	18.2
Croplan Genetics	544CL	N,CL	2113	1757	1935	39.2	142	5	18.9	28.8	18.2
Pioneer Hi-Bred	hybrid 05PI02	N	2062	--	--	38.9	129	2	15.7	30.0	18.2
Scherr's Seed LLC	629	N,CL	2061	--	--	40.4	148	0	16.8	29.1	18.2
Proseed	CL55-15	N,CL	2023	1454	1738	39.3	135	3	14.9	28.8	18.2
Dyna-Gro	91N05	N	1819	--	--	40.3	121	8	13.7	29.3	18.2
Grand mean			2733	1274	2004	40.7	137	3	16.4	29.5	18.1
LSD 5%			590	391		1.4	11	4	3.0	1.7	ns
C.V.			15.5	18.9		2.4	5.6	103.3	13.3	4.2	4.2

* N = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield.
Planted May 19, 2005. Harvested October 12, 2005.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Mark Volk, Ipswich, SD.

Table 6. Oilseed sunflower hybrid trial, Miller, SD - 2005.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Dekalb	EXP001	N	3425	--	--	41.0	173	1	14.3	29.1	18.2
Dekalb	DKF3875	Trad.	3335	--	--	40.9	183	2	13.3	29.6	18.2
Mycogen Seeds	8N352	N	3324	1855	2589	41.6	186	1	14.1	29.8	18.2
Dekalb	EXP002	N	3314	--	--	41.0	168	0	13.4	29.0	18.2
Seeds 2000	Blazer	N	3194	2338	2766	40.3	165	1	16.1	29.3	18.2
Mycogen Seeds	8H350DM	HO	3157	--	--	41.1	178	2	13.4	28.5	18.2
Dyna-Gro	94T90	Trad.	3156	--	--	42.1	177	0	13.2	28.8	18.2
Mycogen Seeds	8N453DM	N	3097	--	--	41.7	191	1	13.8	30.1	18.2
Mycogen Seeds	8D310	N	3096	2435	2766	38.1	166	1	13.7	29.0	18.2
Garst Seed	03TH004251	N	3092	--	--	40.3	180	1	15.5	27.8	18.2
Pioneer Hi-Bred	hybrid 63M80	N	3087	2161	2624	40.8	174	2	13.5	28.5	18.2
Kaystar Seed	9404	Trad.	3066	2372	2719	41.4	171	1	13.6	28.5	18.2
Dahlgren & Co.	DO-4440	N	3051	--	--	39.4	165	-1	14.9	29.2	18.2
Seeds 2000	Barracuda	N,CL	3050	2099	2574	40.3	171	2	15.8	29.6	18.2
Mycogen Seeds	8H419CL	HO,CL	3045	--	--	39.6	182	0	13.9	27.6	18.2
Pioneer Hi-Bred	hybrid 63M91	N	3033	2264	2649	40.3	186	1	13.6	29.5	18.2
Dekalb	DKF38-30NS	N	3027	2399	2713	39.6	172	2	14.8	29.3	18.2
Advanta Pacific	AP541NS	N	3024	--	--	39.3	157	-0	15.0	29.2	18.2
Croplan Genetics	385	N	3020	2367	2694	39.2	171	2	15.2	29.1	18.2
Dahlgren & Co.	DO-4455CL	N,CL	3017	--	--	38.6	191	3	14.2	28.8	18.2
Mycogen Seeds	8N510	N	3017	2806	2911	40.0	174	4	13.4	28.7	18.2
Producers Hybrids	SF7203	Trad.	2982	--	--	41.1	193	1	13.1	29.1	18.2
Pioneer Hi-Bred	hybrid 64H41	HO	2977	--	--	40.0	184	0	14.3	30.2	18.2
Proseed	E-1	HO	2972	--	--	39.9	200	2	13.9	27.4	18.2
Croplan Genetics	3080DMR	N	2968	2060	2514	40.3	172	1	13.4	28.4	18.2
Dekalb	DKF39-01	Trad.	2934	--	--	41.5	158	1	14.0	29.2	18.2
Seeds 2000	Sierra	HO	2932	--	--	39.6	178	2	13.8	27.8	18.2
Pannar Seeds	PEX 2413	N	2896	--	--	40.1	169	2	14.9	28.6	17.7
Triumph Seed	645	N	2888	2239	2563	40.7	180	0	15.5	28.2	18.2
Producers Hybrids	SF7303	N	2866	2245	2555	40.6	180	2	16.0	28.5	18.2
Advanta Pacific	AP534NS/CL	N,CL	2862	--	--	39.7	184	2	14.1	27.7	18.2
Mycogen Seeds	SF187	Trad.	2851	2293	2572	40.5	157	0	13.5	29.6	18.2
Dekalb	MH4331B	N	2805	--	--	41.3	164	1	14.0	29.1	18.2
Triumph Seed	s672	N	2790	--	--	41.2	109	0	13.7	29.0	18.2
Croplan Genetics	544CL	N,CL	2782	--	--	38.6	174	1	13.6	28.9	18.2
Dyna-Gro	93N05	N	2774	--	--	39.5	167	1	14.2	28.5	18.2
Kaystar Seed	9501	Trad.	2768	2168	2468	39.9	187	1	13.7	29.5	18.2
Pioneer Hi-Bred	hybrid 05PI02	N	2767	--	--	39.0	171	4	13.1	27.7	18.0
Croplan Genetics	378DMR,HO	HO	2748	--	--	39.7	182	0	15.2	27.8	18.2
Mycogen Seeds	8N386CL	N,CL	2744	--	--	40.2	177	1	14.4	27.6	18.2
Dekalb	DKF38-80CL	Trad,CL	2734	2031	2383	40.3	162	2	13.9	28.3	18.2
Garst Seed	4690 NS	N	2725	--	--	40.9	151	2	13.4	30.4	18.2
Proseed	T-1	N	2723	2015	2369	40.7	155	4	16.6	26.8	16.9
Pannar Seeds	PEX 2424	N	2720	--	--	39.2	175	0	15.2	28.7	17.1
Garst Seed	02TH003896	N	2716	--	--	40.4	181	3	15.2	30.0	18.2
Proseed	E-2	Trad.	2685	--	--	39.2	174	0	13.4	27.9	18.2
Proseed	9405	N	2640	2117	2379	41.1	151	1	14.9	27.6	18.2
Garst Seed	03TH004205	N	2638	--	--	39.4	192	5	14.1	29.7	17.3

Table 6 (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific	AP561NS	N	2629	--	--	38.9	188	0	13.8	27.9	18.2
Advanta Pacific	F10125CL	N,CL	2624	--	--	38.6	182	1	13.9	28.1	18.2
Croplan Genetics	380	N	2566	2233	2400	39.6	186	-0	14.2	29.1	18.2
Dekalb	DKF30-33NS	N	2531	2583	2557	39.6	171	1	13.8	29.8	18.2
Dahlgren & Co.	DO-4421	N	2507	2300	2404	38.9	179	-0	12.9	28.0	18.2
Proseed	9441	N	2488	1766	2127	40.0	184	2	13.1	29.1	18.2
USDA	894 (check)	Trad.	2477	1834	2156	41.1	170	1	13.6	28.9	18.2
Proseed	E-3	N	2463	--	--	40.2	165	2	13.4	28.4	18.2
Garst Seed	4682 NC/CL	N,CL	2448	--	--	39.7	160	3	13.4	28.7	18.2
Pioneer Hi-Bred	hybrid 64H45	HO	2392	--	--	41.2	184	0	14.2	30.7	18.2
Proseed	T-5	N	2374	--	--	40.6	187	2	13.8	29.0	18.2
Dyna-Gro	91N05	N	2346	--	--	40.7	157	1	12.8	28.9	18.2
Dyna-Gro	93C05	Trad.	2276	--	--	40.2	166	0	13.1	28.5	17.3
Kaystar Seed	8550NS/CL	N,CL	2260	--	--	39.4	170	4	13.1	28.5	18.2
Proseed	CL 43	N,CL	2086	--	--	38.8	158	2	13.0	29.1	11.6
Proseed	CL55-15	N,CL	1964	1476	1720	38.9	164	0	13.2	29.0	18.2
Grand mean			2812	2151	2481	40.1	173	1	14.0	28.8	18.0
LSD 5%			473	441		1.3	13	3	0.8	0.8	1.6
C.V.			12.1	14.7		2.2	5.3	173	4.2	2.0	6.3

* N = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield.

Planted June 23, 2005. Harvested October 30, 2005.

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Cooperator: Kelvin Grey, St. Lawrence, SD.

Table 7. Oilseed sunflower hybrid trial, Onida, SD - 2005.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A	Hulling Quality Test
Mycogen Seeds	8D310	N	2172	1833	2002	39.7	63	99	154	0	10.8	28.4	17.6	Excel.
Croplan Genetics	378DMR,HO	HO	2154	--	--	39.2	63	102	153	2	11.9	28.4	15.2	Excel.
Triumph Seed	s675	N	2141	1899	2020	42.5	68	112	106	0	12.0	28.0	17.9	NT
Seeds 2000	Sierra	HO	2112	--	--	39.5	67	107	151	0	12.0	27.8	14.7	NT
Interstate Seed	IS Hysun 450	N	2111	2045	2078	39.6	66	106	142	0	14.0	28.8	12.6	NT
Dekalb	EXP001	N	2107	--	--	40.4	64	107	155	1	12.0	28.6	18.2	Excel.
Mycogen Seeds	8N352	N	2107	1797	1952	41.0	62	104	153	0	11.7	29.8	17.3	NT
Garst Seed	03TH004205	N	2019	--	--	40.4	62	101	151	4	11.5	29.9	18.2	NT
Mycogen Seeds	8N453DM	N	2013	--	--	43.1	62	103	154	0	11.2	30.4	18.2	NT
Mycogen Seeds	8H419CL	HO,CL	2006	--	--	40.0	64	102	149	2	9.0	28.9	18.2	NT
Seeds 2000	Blazer	N	1996	1965	1980	40.8	64	104	151	1	12.1	29.5	17.6	NT
Dyna-Gro	94T90	Trad.	1970	--	--	41.7	64	100	157	-0	10.3	30.1	18.2	NT
Pannar Seeds	PEX 2424	N	1963	--	--	40.2	65	107	147	2	13.4	28.7	13.1	NT
Interstate Seed	IS Hysun 424	N	1956	2070	2013	40.4	66	102	147	0	11.6	28.2	18.2	NT
Dekalb	MH4331B	N	1947	--	--	41.0	64	105	143	3	12.4	30.0	16.2	Excel.
Pannar Seeds	PEX 2413	N	1941	--	--	39.1	65	109	140	1	13.1	28.2	16.7	NT
Dekalb	DKF3875	Trad.	1917	--	--	41.0	64	104	152	5	11.7	28.1	13.9	Excel.
Proseed	T-5	N	1899	--	--	41.1	66	100	158	2	12.2	30.0	16.9	NT
Croplan Genetics	345	N	1892	1947	1919	40.3	62	100	150	2	10.5	29.1	18.2	Excel.
Proseed	9441	N	1887	825	1356	40.6	65	100	153	3	11.4	28.3	18.2	NT
Dekalb	EXP002	N	1885	--	--	41.8	62	100	150	2	9.9	29.7	18.2	Excel.
Mycogen Seeds	8H350DM	HO	1876	--	--	41.3	61	100	148	3	11.0	29.2	18.2	NT
Garst Seed	02TH003896	N	1875	--	--	40.6	64	104	155	5	11.8	30.7	18.2	NT
Pioneer Hi-Bred	hybrid 63M91	N	1866	2220	2043	40.9	62	98	167	3	10.5	29.4	13.6	Excel.
Pioneer Hi-Bred	hybrid 05PI02	N	1862	--	--	40.2	61	97	140	1	10.2	28.8	18.2	Excel.
Proseed	E-3	N	1859	--	--	40.5	62	98	141	5	10.5	29.0	18.2	Excel.
Kaystar Seed	9501	Trad.	1858	2261	2060	40.9	65	107	156	3	11.5	29.6	18.2	NT
Croplan Genetics	340HO	HO	1857	--	--	40.1	62	103	141	0	11.3	28.7	18.2	Excel.
Mycogen Seeds	E84352CL	N,CL	1856	--	--	41.4	62	101	144	-0	10.9	29.5	17.9	NT
Producers Hybrids	SF7303	N	1853	1978	1916	42.0	66	107	144	1	12.5	29.3	16.4	NT
Triumph Seed	660CL	N,CL	1850	--	--	40.0	67	105	158	3	12.0	28.8	17.6	NT
Dekalb	DKF30-33NS	N	1846	1624	1735	39.7	62	103	157	1	11.4	30.1	17.9	Excel.
Dekalb	MH5434	N	1841	--	--	41.7	64	100	158	3	12.5	29.1	18.2	Excel.
Proseed	T-1	N	1841	1393	1617	40.0	64	102	148	2	12.0	28.0	16.7	NT
Dahlgren & Co.	DO-4421	N	1835	2141	1988	39.1	62	99	157	0	11.9	28.2	15.1	NT
Producers Hybrids	SF7203	Trad.	1832	--	--	41.5	64	100	153	3	11.0	30.1	17.6	NT
Pioneer Hi-Bred	hybrid 63M80	N	1826	1503	1665	41.2	62	101	151	-0	11.3	28.9	18.2	Excel.
Seeds 2000	Barracuda	N,CL	1823	1626	1724	40.2	66	104	150	1	10.9	29.8	18.2	NT
Mycogen Seeds	8N510	N	1817	2082	1950	40.2	64	104	146	0	10.5	28.1	17.6	Excel.
Triumph Seed	TR620CL	N,CL	1801	--	--	38.8	62	103	159	0	11.4	28.2	18.2	NT
Croplan Genetics	343HO,DMR	HO	1797	--	--	40.2	63	105	152	2	11.9	31.1	17.9	Excel.
Triumph Seed	s672	N	1796	--	--	40.7	67	108	96	0	11.7	30.0	17.9	NT
Triumph Seed	TRX4240	N	1788	--	--	40.4	64	99	153	0	11.1	29.6	17.6	NT
Dekalb	DKF38-30NS	N	1784	1927	1856	40.4	66	107	159	0	12.1	29.3	14.7	Excel.
Kaystar Seed	9404	Trad.	1778	1626	1702	41.2	62	99	141	0	11.3	29.3	18.2	NT
Dahlgren & Co.	DO-4455CL	N,CL	1773	--	--	39.6	66	107	154	3	12.2	28.9	18.2	NT
Mycogen Seeds	SF187	Trad.	1763	1983	1873	40.0	63	97	138	1	11.7	29.2	18.2	Excel.
Mycogen Seeds	8N386CL	N,CL	1743	--	--	38.8	63	103	155	-0	11.7	29.5	17.9	NT
Dekalb	DKF38-80CL	Trad,CL	1741	1699	1720	41.4	63	100	149	0	11.0	29.1	18.2	Good

Table 7 (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004	2-yr	Oil %	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A	Hulling Quality Test
Dekalb	MH4436	N	1722	--	--	41.3	63	99	146	6	11.1	29.5	18.2	Excel.
Proseed	E-1	HO	1715	--	--	39.5	63	99	149	1	10.8	28.2	16.7	NT
USDA	894 (check)	Trad.	1709	1392	1550	40.2	62	99	150	7	10.0	28.8	14.9	NT
Dekalb	MH4435	N	1703	--	--	40.4	64	98	145	8	11.1	29.3	16.9	Excel.
Proseed	CL 43	N,CL	1699	--	--	40.1	64	98	146	1	10.8	29.3	11.8	Excel.
Triumph Seed	645	N	1690	2020	1855	42.1	65	105	146	-0	12.5	28.0	18.2	NT
Mycogen Seeds	8N429CL	N,CL	1683	--	--	40.3	63	99	156	1	11.7	28.1	17.6	NT
Proseed	9405	N	1682	1579	1631	38.8	64	103	146	1	12.1	27.9	16.3	NT
Triumph Seed	s678	N	1661	--	--	42.6	67	109	123	2	12.8	28.8	16.9	NT
Dyna-Gro	91N05	N	1660	--	--	39.9	59	96	141	7	10.7	28.6	15.0	NT
Dekalb	DKF39-01	Trad.	1651	--	--	41.0	61	102	151	2	11.4	29.7	18.2	NT
Kaystar Seed	X5100HO	HO	1644	--	--	39.8	63	100	152	-0	12.0	28.8	14.9	NT
Interstate Seed	IS 4540NS	N	1622	--	--	41.1	60	97	132	2	9.9	29.2	17.3	Excel.
Pioneer Hi-Bred	hybrid 64H41	HO	1612	--	--	40.2	63	102	160	3	11.5	31.4	18.2	Excel.
Garst Seed	03TH004251	N	1593	--	--	39.3	64	103	152	1	12.6	28.4	16.7	NT
Proseed	E-2	Trad.	1591	--	--	40.8	62	99	150	2	10.6	29.5	17.6	Excel.
Interstate Seed	IS HyOleic 120	HO	1591	--	--	39.8	62	103	150	2	11.8	29.0	17.9	NT
Dekalb	DKF33-33NS	N	1578	1579	1579	39.4	60	100	150	-0	11.3	29.7	17.6	Excel.
Garst Seed	4682 NC/CL	N,CL	1578	--	--	41.7	63	101	140	3	10.2	29.1	18.2	NT
Garst Seed	4690 NS	N	1569	--	--	38.2	60	97	128	3	11.1	28.6	18.2	NT
Triumph Seed	820HO	HO	1558	--	--	40.9	62	102	155	0	11.0	31.2	18.2	NT
Proseed	CL55-15	N,CL	1540	1250	1395	39.0	63	96	137	3	11.1	28.4	18.2	NT
Dyna-Gro	93C05	Trad.	1519	--	--	41.9	64	104	142	0	10.9	28.6	18.2	NT
Dahlgren & Co.	DO-4440	N	1509	--	--	39.2	61	98	147	0	11.7	29.2	17.3	NT
Interstate Seed	IS F10016	N	1484	1963	1723	41.0	63	98	135	1	11.6	29.2	18.2	Excel.
Interstate Seed	IS F10046	HO	1482	--	--	41.9	66	107	142	0	11.0	29.8	15.4	Excel.
Interstate Seed	IS 4704NS	N	1478	1553	1516	40.4	61	102	143	0	11.9	31.3	18.2	Excel.
Dekalb	MH5330	N	1475	--	--	40.4	61	98	160	1	10.4	29.4	18.2	Excel.
Dyna-Gro	93N05	N	1403	--	--	39.7	62	103	141	2	12.6	28.8	13.9	NT
Pioneer Hi-Bred	hybrid 64H45	HO	1368	--	--	40.8	65	100	151	4	11.7	30.2	18.2	Excel.
Interstate Seed	IS Hysun 525	N	1262	2070	1666	39.9	64	99	151	3	12.1	29.0	18.2	Excel.
Grand mean			1778	1743	1760	40.5	63	102	148	1	11.5	29.2	17.2	
LSD 5%			380	464		1.8	1	2	8	3	1.4	1.2	ns	
C.V.			13.3	19.1		2.8	1.1	1.5	3.2	120	7.8	2.5	15.8	

* N = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield.

Planted June 7, 2005. Harvested October 23, 2005.

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Hulling quality test: NT = not tested, Excel.= >65% of seed passes over a 14/64 screen, Good = >75% of seed passes over a 13/64 screen.

Cooperator: Van and Chris Huse, Onida, SD.

Table 8. Oilseed sunflower hybrid trial, Reliance, SD - 2005.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004^	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Dekalb	DKF3875	Trad.	2798	--	--	40.2	141	1	14.4	29.1	15.2
Mycogen Seeds	8D310	N	2572	1522	2047	37.6	152	0	12.5	26.7	14.3
Proseed	9405	N	2488	1464	1976	39.1	130	0	15.8	27.3	17.3
Producers Hybrids	SF7203	Trad.	2487	--	--	40.6	156	0	11.5	29.0	18.2
Seeds 2000	Sierra	HO	2455	--	--	39.1	142	0	13.9	28.1	16.7
Mycogen Seeds	8N510	N	2453	2223	2338	38.3	148	0	13.8	27.6	17.7
Garst Seed	02TH003896	N	2424	--	--	38.2	159	0	14.6	29.2	14.5
Garst Seed	4682 NC/CL	N,CL	2395	--	--	39.2	135	0	11.7	29.5	16.7
Triumph Seed	645	N	2390	1722	2056	39.4	143	0	16.0	27.0	16.7
Croplan Genetics	385	N	2310	1854	2082	39.2	131	1	15.4	28.9	18.2
Mycogen Seeds	8N386CL	N,CL	2303	--	--	37.8	161	2	14.5	27.2	16.7
Proseed	T-5	N	2293	--	--	38.4	153	0	14.0	29.2	18.2
Dyna-Gro	94T90	Trad.	2282	--	--	40.4	153	-0	12.3	28.2	17.9
Kaystar Seed	8550NS/CL	N,CL	2273	--	--	37.5	145	0	13.2	27.3	17.3
Mycogen Seeds	8N352	N	2250	1595	1922	39.0	154	2	14.3	29.3	16.9
Triumph Seed	s678	N	2200	--	--	39.7	109	-0	14.5	28.2	18.2
Croplan Genetics	380	N	2185	2016	2101	38.4	154	0	13.4	28.3	17.6
Mycogen Seeds	8H419CL	HO,CL	2174	--	--	39.5	156	-0	12.3	28.1	15.4
Proseed	E-2	Trad.	2130	--	--	35.3	151	2	14.0	28.6	14.3
Pioneer Hi-Bred	hybrid 05PI02	N	2056	--	--	38.4	130	0	12.1	28.4	18.2
Dekalb	EXP001	N	2012	--	--	37.6	147	0	14.4	29.1	17.6
Producers Hybrids	SF7303	N	2008	2041	2025	38.9	120	1	17.8	27.8	15.1
Proseed	E-1	HO	1957	--	--	38.7	167	0	13.0	27.0	18.2
cmsHA406/RHA373	(check)	Trad.	1947	--	--	39.4	156	-0	13.0	28.6	18.2
Garst Seed	4690 NS	N	1936	--	--	39.2	119	-0	13.0	29.6	15.3
Pioneer Hi-Bred	hybrid 63M80	N	1928	1659	1794	40.9	149	0	11.3	27.3	16.7
Mycogen Seeds	SF187	Trad.	1921	2015	1968	38.9	129	-0	14.0	28.5	12.8
Kaystar Seed	9501	Trad.	1916	1930	1923	38.3	153	0	14.7	29.2	18.2
Dekalb	EXP002	N	1878	--	--	39.4	138	1	13.9	28.1	16.8
Dekalb	DKF38-80CL	Trad,CL	1875	1872	1873	40.5	145	0	12.5	27.4	14.9
Croplan Genetics	378DMR,HO	HO	1863	--	--	38.5	146	1	16.6	26.2	16.9
Mycogen Seeds	8H350DM	HO	1860	--	--	39.0	154	0	13.2	27.6	14.5
Dekalb	MH4331B	N	1856	--	--	39.6	134	1	12.2	28.4	16.8
Pioneer Hi-Bred	hybrid 64H45	HO	1849	--	--	40.6	152	0	13.5	30.1	16.7
Triumph Seed	s672	N	1836	--	--	40.1	92	0	15.2	28.0	17.6
Proseed	CL55-15	N,CL	1821	795	1308	38.0	146	-0	13.6	29.1	18.2
Dekalb	DKF39-01	Trad.	1807	--	--	40.0	144	1	13.0	28.5	16.4
Proseed	9441	N	1799	1633	1716	38.0	158	0	12.7	27.8	16.7
Proseed	T-1	N	1781	1845	1813	37.9	143	0	15.6	26.5	9.6
Mycogen Seeds	8N453DM	N	1778	--	--	39.7	151	0	12.6	29.9	17.3
Proseed	CL 43	N,CL	1772	--	--	37.0	147	-0	14.0	28.1	16.3
Dyna-Gro	91N05	N	1740	--	--	38.6	123	3	11.7	28.2	16.9
Pioneer Hi-Bred	hybrid 64H41	HO	1712	--	--	38.4	151	-0	13.9	29.4	18.2
Dyna-Gro	93C05	Trad.	1712	--	--	41.2	138	0	12.1	28.3	17.3
Dekalb	DKF30-33NS	N	1710	1553	1631	39.3	145	1	13.1	27.6	17.6
Proseed	E-3	N	1667	--	--	37.6	149	1	13.0	26.7	16.7
USDA	894 (check)	Trad.	1658	1506	1582	39.2	142	1	12.1	29.5	17.6
Dyna-Gro	93N05	N	1599	--	--	37.1	133	0	13.0	28.8	11.2

Table 8 (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2005	2004^	2-yr	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Seeds 2000	Blazer	N	1565	1506	1535	39.1	131	1	12.9	27.9	18.2
Seeds 2000	Barracuda	N,CL	1553	1865	1709	37.0	144	-0	16.1	28.5	16.4
Pioneer Hi-Bred	hybrid 63M91	N	1481	461	971	38.6	154	0	14.5	29.2	15.4
Garst Seed	03TH004205	N	1364	--	--	38.4	151	1	14.6	29.3	11.4
Garst Seed	03TH004251	N	1260	--	--	37.9	150	0	17.2	26.2	14.9
Dekalb	DKF38-30NS	N	1251	1729	1490	38.1	145	0	14.8	29.3	15.8
Grand mean			1974	1616	1795	38.8	143	0	13.8	28.3	16.4
LSD 5%			599	406		1.6	11	ns	2.4	1.5	ns
C.V.			18.7	12.5		2.6	5.3	390.9	12.6	3.8	17.1

* N = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield.

^ 2004 yields are from Kennebec, SD.

Planted June 24, 2005. Harvested October 18, 2005.

Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Cooperator: Trent Schindler, Reliance, SD.

Table 9. Oilseed sunflower hybrid trial, averaged over Onida, Miller, Reliance, and Ipswich SD - 2005.

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Dekalb	DKF3875	Trad.	2805	40.9	155	2	13.5	29.5	16.4
Mycogen Seeds	8D310	N	2725	38.6	152	0	13.4	28.3	17.1
Mycogen Seeds	8N352	N	2684	40.9	158	0	14.1	29.7	17.7
Mycogen Seeds	8H350DM	HO	2653	40.9	155	2	13.2	28.7	17.3
Seeds 2000	Sierra	HO	2647	39.7	153	1	15.0	27.6	17.0
Mycogen Seeds	8N510	N	2628	39.7	152	1	13.0	28.5	17.9
Triumph Seed	645	N	2623	40.8	151	1	14.9	28.1	17.8
Mycogen Seeds	8H419CL	HO,CL	2621	40.2	158	1	12.5	28.4	17.5
Producers Hybrids	SF7203	Trad.	2561	41.4	162	1	12.5	29.5	18.1
Dekalb	MH4331B	N	2551	40.7	145	2	13.7	29.3	17.4
Seeds 2000	Blazer	N	2522	40.5	143	1	14.2	29.1	18.1
Dyna-Gro	94T90	Trad.	2516	41.6	159	1	12.5	29.2	18.1
Mycogen Seeds	8N453DM	N	2495	41.6	160	0	13.5	30.2	18.0
Mycogen Seeds	SF187	Trad.	2460	40.2	138	-0	13.6	29.4	16.9
Producers Hybrids	SF7303	N	2447	40.6	145	1	16.3	28.7	17.0
Garst Seed	02TH003896	N	2434	40.0	161	4	14.7	30.2	17.3
Mycogen Seeds	8N386CL	N,CL	2395	39.4	159	1	14.3	28.2	17.8
Proseed	E-1	HO	2389	39.3	168	1	13.0	27.8	17.7
Triumph Seed	s672	N	2389	41.4	100	-0	14.5	29.1	18.0
Croplan Genetics	378DMR,HO	HO	2353	39.4	156	1	15.0	27.8	17.1
Proseed	T-5	N	2338	40.0	159	1	14.3	29.2	17.4
Garst Seed	4682 NC/CL	N,CL	2327	40.3	142	2	12.8	29.2	17.8
Pioneer Hi-Bred	hybrid 63M80	N	2317	41.1	150	1	12.7	28.9	17.8
Proseed	9405	N	2297	39.7	140	1	15.5	27.6	17.5
Dekalb	DKF39-01	Trad.	2261	41.0	146	2	12.9	29.6	17.8
Proseed	T-1	N	2259	39.9	144	3	15.5	27.3	15.4
Garst Seed	4690 NS	N	2238	39.8	128	2	13.5	29.8	17.5
Dekalb	DKF30-33NS	N	2234	39.5	155	1	13.6	29.4	18.0
Proseed	9441	N	2218	39.8	160	2	12.9	28.5	17.8
Pioneer Hi-Bred	hybrid 05PI02	N	2187	39.1	143	2	12.8	28.7	18.2
Pioneer Hi-Bred	hybrid 64H41	HO	2186	39.6	161	2	13.8	30.3	18.2
Proseed	E-2	Trad.	2185	38.8	156	3	13.4	28.9	17.1
Pioneer Hi-Bred	hybrid 63M91	N	2182	40.1	163	2	13.4	29.9	16.4
Dekalb	DKF38-80CL	Trad.,CL	2168	40.6	147	1	13.3	28.4	17.4
Dekalb	DKF38-30NS	N	2163	39.6	156	0	14.7	29.4	16.7
Seeds 2000	Barracuda	N,CL	2157	39.7	152	2	15.5	29.2	17.8
Garst Seed	03TH004205	N	2157	39.5	160	6	14.5	29.4	16.3
Proseed	E-3	N	2139	39.6	147	3	12.9	28.5	17.8
Garst Seed	03TH004251	N	2108	39.5	156	2	15.1	28.0	17.0
USDA	894 (check)	Trad.	2053	40.8	145	4	13.0	29.4	17.1
Pioneer Hi-Bred	hybrid 64H45	HO	2046	41.0	158	1	14.2	30.1	17.8
Dyna-Gro	93N05	N	2032	38.9	144	1	14.6	28.8	15.4
Dyna-Gro	93C05	Trad.	2007	41.4	146	1	13.8	28.6	17.8
Proseed	CL 43	N,CL	1964	38.8	146	4	13.7	28.9	14.5
Dyna-Gro	91N05	N	1891	39.9	135	4	12.2	28.8	17.1
Proseed	CL55-15	N,CL	1837	38.8	145	1	13.2	28.8	18.2
Grand mean			2323	40.1	150	2	13.8	28.9	17.3
LSD 5%			382	1.0	8	2	1.3	0.9	1.8
C.V.			11.8	1.8	4.0	112.1	6.9	2.2	7.4

Table 10. Confection hybrid sunflower trial, Miller, SD - 2005.

Brand	Hybrid	Seed Yield (lbs/A) 2005	2004	2-yr	Plant Height cm	Lodging %	Test Wt. lb/bu	Pop. 1000 pl/A	% Seed Over Screen 22/64	20/64	18/64	Nutmeat %
Red River Commodities	2215	3828	--	--	185	1	22.5	16.7	39	75	90	54
Sigco Sun Products	SS3638	3667	1827	2747	189	1	23.3	16.7	49	80	93	51
Sigco Sun Products	SS3938	3661	1992	2826	188	2	23.9	16.7	48	77	89	51
Red River Commodities	2216	3488	--	--	190	0	24.4	16.0	48	80	93	54
Seeds 2000	Grizzly	3476	2031	2753	192	1	24.8	16.3	49	78	92	56
CHS Sunflower	RH316	3473	--	--	188	2	23.7	16.7	51	82	94	53
Mycogen Seeds	8C416	3468	1658	2563	188	0	22.9	16.7	58	80	91	53
Dahlgren & Co.	D-9530	3456	2055	2756	182	1	25.3	16.7	51	79	91	53
Red River Commodities	2214	3448	--	--	188	0	23.2	16.5	60	84	92	54
CHS Sunflower	RH112	3409	--	--	186	0	22.7	16.7	63	86	95	51
Croplan Genetics	135	3373	1466	2420	169	3	20.4	16.7	62	83	92	50
Triumph Seed	767C	3341	--	--	185	2	25.1	16.5	53	84	94	55
CHS Sunflower	RH312	3299	--	--	180	2	23.0	16.7	69	89	96	54
Red River Commodities	8050	3242	--	--	204	2	22.8	16.7	46	79	93	52
Seeds 2000	Panther	3236	--	--	160	1	21.2	15.5	54	84	92	51
Mycogen Seeds	8C481	3177	--	--	185	1	23.9	16.7	51	80	94	55
Dahlgren & Co.	D-9531	3053	--	--	198	1	23.7	16.7	44	77	91	53
Triumph Seed	777C	2987	--	--	196	2	23.2	16.7	66	86	93	54
Croplan Genetics	130	2913	--	--	181	2	23.2	16.7	62	82	90	53
USDA	924 (check)	2864	1648	2256	200	1	22.8	16.7	26	43	67	55
Garst Seed	IS8048	2460	1960	2210	185	0	25.5	16.5	45	76	90	52
Grand mean		3301	1844	2572	187	1	23.4	16.6	52	79	91	53
LSD 5%		563	464		9	ns	2.0	ns	11	6	3	3
C.V.		12.1	17.7		3.4	167.0	6.1	3.1	14.6	5.2	2.4	4.2

Planted June 23, 2005. Harvested October 30, 2005.
Cooperator: Kelvin Grey, St. Lawrence, SD.

Table 11. Confection hybrid sunflower trial, Onida, SD - 2005.

		Seed Yield (lbs/A)			Plant Height	Days to		Lodging	Test Wt.	Pop. 1000	% Seed Over Screen			Numeat
Brand	Hybrid	2005	2004	2-yr	cm		Mat.	%	lb/bu	pl/A	22/64	20/64	18/64	%
Seeds 2000	Grizzly	2217	2167	2192	163	67	108	1	24.4	16.7	45	71	87	48
Mycogen Seeds	8C481	2125	--	--	177	65	104	0	24.0	16.7	40	72	85	50
Sigco Sun Products	SS3938	2086	2009	2048	161	62	101	1	25.6	14.1	50	78	90	47
Dahlgren & Co.	D-9530	2069	2088	2079	158	65	104	2	23.5	13.9	48	72	86	49
Triumph Seed	777C	2067	--	--	163	67	106	0	23.4	16.5	43	72	87	51
CHS Sunflower	RH316	2022	--	--	158	62	100	2	24.1	14.5	41	69	87	46
CHS Sunflower	RH312	1934	--	--	156	64	105	1	23.9	13.3	53	75	88	49
Sigco Sun Products	SS3638	1863	1782	1822	158	65	103	1	23.6	14.0	57	78	89	45
Red River Commodities	8050	1808	--	--	172	66	107	2	23.9	16.5	47	72	87	48
Red River Commodities	2215	1798	1544	1671	161	65	103	3	24.2	14.6	52	78	89	49
Seeds 2000	Panther	1732	--	--	149	57	100	3	24.1	12.7	52	80	90	48
Croplan Genetics	135	1686	--	--	143	56	94	5	22.6	13.5	50	74	87	46
Red River Commodities	2214	1667	1743	1705	152	63	103	1	23.8	14.0	55	76	88	47
Dahlgren & Co.	D-9531	1608	--	--	166	65	103	2	24.7	16.5	40	69	86	47
Red River Commodities	2216	1573	--	--	163	64	103	1	24.3	14.4	50	77	89	49
USDA	924 (check)	1559	1508	1533	166	64	99	5	24.4	14.2	32	51	69	49
Croplan Genetics	130	1558	--	--	155	59	95	3	23.4	16.5	43	68	83	48
Mycogen Seeds	8C416	1509	1727	1618	167	65	102	2	23.0	15.6	44	69	85	49
Garst Seed	IS8048	1350	1385	1368	158	61	102	1	24.6	15.0	42	71	88	48
CHS Sunflower	RH112	1345	--	--	155	62	99	6	22.1	13.7	53	74	86	46
Grand mean		1779	1705	1742	160	63	102	2	23.9	14.8	47	72	86	48
LSD 5%		339	416		7	1	2	3	ns	ns	13	8	4	3
C.V.		13.4	17.1		2.9	1.0	1.3	121.8	5.1	22.6	20.0	7.6	3.2	4.1

Planted June 7, 2005. Harvested October 23, 2005.

Cooperator: Van and Chris Huse, Onida, SD.

Table 12. Confection hybrid sunflower trial, averaged over Miller and Onida, SD - 2005.

Brand	Hybrid	Seed Yield lbs/A	Plant Height cm	Lodg ing %	Test Wt. lb/bu	Pop. 1000 pl/A	% Seed Over Screen 22/64	20/64	18/64	Nutmeat %
Sigco Sun Products	SS3938	2877	175	2	24.8	15.4	49	77	90	49
Seeds 2000	Grizzly	2850	178	1	24.6	16.5	47	75	90	52
Red River Commodities	2215	2817	173	2	23.4	15.7	46	76	90	52
Sigco Sun Products	SS3638	2769	174	1	23.4	15.3	53	79	91	48
Dahlgren & Co.	D-9530	2766	170	1	24.4	15.3	49	76	89	51
CHS Sunflower	RH316	2751	173	2	23.9	15.6	46	75	91	50
Mycogen Seeds	8C481	2654	181	1	23.9	16.7	45	76	90	53
CHS Sunflower	RH312	2620	168	1	23.5	15.0	61	82	92	51
Red River Commodities	2214	2561	170	1	23.5	15.2	58	80	90	51
Red River Commodities	2216	2534	177	0	24.3	15.2	49	79	91	52
Croplan Genetics	135	2533	156	4	21.5	15.1	56	78	89	48
Triumph Seed	777C	2530	179	1	23.3	16.6	55	79	90	52
Red River Commodities	8050	2528	188	2	23.4	16.6	47	76	90	50
Mycogen Seeds	8C416	2492	178	1	22.9	16.1	51	74	88	51
Seeds 2000	Panther	2487	155	2	22.7	14.1	53	82	91	50
CHS Sunflower	RH112	2380	171	3	22.4	15.2	58	80	91	48
Dahlgren & Co.	D-9531	2334	182	1	24.2	16.6	42	73	89	50
Croplan Genetics	130	2239	168	2	23.3	16.6	53	75	87	51
USDA	924 (check)	2215	183	3	23.6	15.4	29	47	68	52
Garst Seed	IS8048	1909	172	1	25.1	15.7	44	73	89	50
Grand mean		2543	173	2	23.6	15.7	49	76	89	50
LSD 5%		484	11	ns	1.7	ns	14	9	4	2
C.V.		12.7	3.2	147	6.3	15.3	17.2	6.4	2.8	4.3

Table 13. Oilseed sunflower fatty acid profiles -- Onida, SD 2005.

Sunflower	Hybrid	Fatty Acids (%)			
Brand-Hybrid	Type	Oleic	Linoleic	Palmitic	Stearic
Croplan 340HO	High oleic	83.80	5.75	3.53	3.64
Croplan 343HO,DMR	High oleic	84.70	4.63	3.34	3.97
Croplan 378DMR,HO	High oleic	86.80	2.42	3.78	3.76
Dekalb DKF30-33NS	NuSun	68.90	19.30	3.90	4.38
Dekalb DKF33-33NS	NuSun	65.40	22.20	4.03	4.14
Dekalb DKF38-30NS	NuSun	81.40	8.62	3.52	3.46
Dekalb EXP001	NuSun	84.00	4.66	3.54	4.31
Dekalb EXP002	NuSun	87.80	2.22	3.53	2.46
Dekalb MH4331B	NuSun	75.50	12.50	3.90	3.94
Dekalb MH4435	NuSun	78.60	9.84	3.77	4.44
Dekalb MH4436	NuSun	53.60	32.40	5.20	4.52
Dekalb MH5330	NuSun	86.00	4.85	3.45	2.93
Dekalb MH5434	NuSun	82.10	8.50	3.52	2.72
Dyna-Gro 91N05	NuSun	58.60	29.10	5.32	3.34
Dyna-Gro 93N05	NuSun	51.30	35.50	4.99	4.62
Interstate IS 4540NS	NuSun	65.00	23.40	4.74	3.56
Interstate IS 4704NS	NuSun	53.40	33.80	5.02	4.23
Interstate IS F10016	NuSun	65.60	21.40	4.30	5.38
Interstate IS F10046	High oleic	85.40	2.62	3.20	4.46
Interstate IS HyOleic 120	High oleic	84.90	4.79	3.22	2.69
Interstate IS Hysun 424	NuSun	64.00	22.30	4.18	6.10
Interstate IS Hysun 450	NuSun	60.10	26.20	3.87	5.90
Interstate IS Hysun 525	NuSun	51.00	36.00	5.31	3.77
Kaystar X5100HO	High oleic	85.60	4.88	3.22	2.72
Pannar Seeds PEX 2413	NuSun	62.00	24.20	4.27	4.56
Pannar Seeds PEX 2424	NuSun	65.50	23.00	4.23	3.52
Pioneer hybrid 63M80	NuSun	58.70	27.80	4.53	4.48
Pioneer hybrid 63M91	NuSun	60.40	28.40	4.28	3.08
Pioneer hybrid 64H41	High oleic	85.60	2.98	3.46	3.26
Pioneer hybrid 64H45	High oleic	87.90	1.76	3.26	3.46
Pioneer hybrid 05PI02	NuSun	67.00	21.60	4.32	2.95
Proseed E-2	NuSun	21.20	64.20	6.67	4.30
Proseed E-3	NuSun	83.70	5.09	3.84	3.20
Proseed CL 43	NuSun	85.80	2.94	3.86	2.93
Triumph 660CL	NuSun	67.20	21.00	4.82	2.95
Triumph 820HO	High oleic	87.40	2.57	3.30	3.86
Triumph s672	NuSun	64.90	24.10	4.44	3.30

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2005 South Dakota Flax Variety Evaluations

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The success of flax production is affected by choice of variety. Carefully examine variety characteristics such as seed yield, oil content, disease resistance, and maturity. In some cases oil content or other traits may offset a yield advantage.

Yield

Evaluate as much yield data as possible when selecting a variety, looking at relative performance over many locations and years. For example, in this publication, variety comparisons from 3 years and 4 locations are better than those from a single year or location. Consistently good performance over many environments is called "yield stability."

Good yield stability means that a variety may or may not be the best yielder at all locations, but it does rank high in yield potential at many locations. A variety that ranks in the upper 20% over all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

Table 1 presents flax yield data from 2005 for several sites in South Dakota. Three-year and statewide yield averages also are provided. Table 2 summarizes the characteristics of the varieties included in the performance trials.

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.10) value at the bottom of each data column. The LSD value is a statistical way to indicate if a trait like yield differs when comparing two varieties. If two varieties differ by more than the indicated LSD value for a given trait, they will likely differ when grown again under highly similar conditions.

For example, if the trial at Webster could be repeated exactly as it was in 2005 (see Table 1), the yield ranking of Selby (27.3 bu/A) and Webster (24.8 bu/A) might change places since their yield difference (2.5 bu/A) is less than the indicated LSD value of 3.5 bu/A.

However, we would expect Selby (27.3 bu/A) to yield more than CDC Valour (23.1 bu/A) if the test was repeated since their yield difference (4.2 bu/A) is greater than the indicated yield LSD value of 3.5 bu/A.

In Table 1, the minimum yield of varieties that were in the top-yielding group at a particular location is printed at the bottom of each data column (when significant differences in yield were measured). Any variety meeting or exceeding this minimum yield value differed by less than the LSD.10 value from the highest-yielding variety in the test and is therefore considered to be in the top-yielding group. For example, in the 2005 trial at Webster there were six varieties in the top-yield group. Numerically, Selby had the highest yield (27.3 bu/A). However, York, CDC Bethume, Webster, CDC Arras, and FP2119 were also in the top-yield group, because their yields were within one LSD value (3.5 bu/A) of Selby.

If the LSD.10 value is indicated as 'ns', it means that there were no statistically significant differences in yield among the varieties. In other words, the variety yields were all close enough to each other to be essentially the same, considering the amount of error inherent in the test.

When evaluating yield, look at as many trials as possible. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for making variety choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15–20% may be considered reliable.

Oil Content

Among varieties with similar yield potential, select the one with the highest oil content.

Maturity

Later-maturing varieties generally will produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding only an early variety will mature properly and exhibit its best yield potential and oil content.

Seed Availability and Quality

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high quality seed with good germination. Certified seed is recommended to assure varietal purity, seed viability, and freedom from pathogens and weed seed.

Table 1. 2005 and three-year average flax yields(bu/A) at several locations in South Dakota.

		Brookings Early-seeded		Brookings Late-seeded		Watertown		Webster		Statewide		State-wide	Yield* Sta-
Variety	Origin -Year	2005	2-yr	2005	3-yr	2005	2-yr	2005	3-yr	2005	3-yr	Rank	bility
			-2-		-3-		-2-		-3-	-4-	-10-		
AC Carnduff	CAN-99	25.4	29.8	21.7	21.1	30.8	32.2	23.0	33.7	25.1	28.9	2	3/9
AC Hanley	CAN-02	23.6	25.9	18.1	20.3	31.6	30.7	21.0	32.5	23.5	27.1	18	1/9
AC Watson	CAN-97	25.9	25.4	18.9	19.6	22.8	28.8	22.7	34.7	22.5	27.3	16	2/9
Carter	ND-05	26.0	29.3	22.6	19.9	33.8	32.6	22.5	32.6	26.1	28.1	10	3/9
Cathay	ND-97	27.6	25.9	20.6	21.3	26.2	26.9	21.5	30.2	23.9	26.1	25	2/9
CDC Arras	CAN-00	23.6	25.4	22.7	23.1	29.5	35.2	25.2	35.1	25.2	29.4	1	6/9
CDC Bethume	CAN-00	23.7	26.5	21.7	21.4	21.4	29.7	26.3	34.9	23.2	28.2	8	5/9
CDC Mons	CAN-03	25.4	28.6	20.3	19.0	29.0	29.7	21.6	32.6	24.0	27.5	14	3/9
CDC Normandy	CAN-96	28.7	27.7	21.5	24.2	28.0	27.2	22.4	31.3	25.1	27.5	15	3/9
CDC Valour	CAN-97	25.5	24.8	19.9	20.1	26.7	28.9	23.1	32.7	23.7	26.6	22	1/9
Linora	CAN-92	21.2	27.0	20.9	23.2	18.8	26.9	20.0	31.3	20.1	27.3	17	3/9
Linott	CAN-66	25.4	26.5	22.0	21.0	27.0	29.5	22.5	31.4	24.2	26.8	19	1/9
McGregor	CAN-82	27.2	23.3	19.2	19.6	29.5	31.1	21.7	32.5	24.3	26.7	20	2/9
Nekoma	ND-02	24.8	28.5	20.2	21.7	33.3	32.5	22.0	29.9	25.0	27.9	11	2/9
Omega	ND-90	26.4	25.4	19.8	17.7	25.1	24.6	22.1	31.9	23.3	25.5	26	1/9
Pembina	ND-97	26.1	27.6	20.2	22.6	28.2	31.0	22.2	30.4	24.1	27.7	12	0/9
Prairie Blue	CAN-03	23.9	29.0	20.7	23.5	26.7	29.8	22.5	30.1	23.4	27.6	13	2/9
Rahab 94	SD-94	26.6	26.3	20.0	21.9	32.9	34.6	21.2	33.6	25.1	28.7	4	2/9
Selby	SD-00	26.8	27.2	22.7	22.6	26.5	30.0	27.3	31.9	25.7	28.3	7	4/9
Verne 93	SD-93	25.9	27.7	19.7	22.1	25.5	26.3	19.8	31.1	22.7	26.7	21	1/9
Webster	SD-98	27.8	28.1	20.3	23.6	29.5	31.8	24.8	32.4	25.5	28.5	6	3/9
York	ND-02	25.4	27.3	21.4	21.6	33.0	33.4	24.0	33.1	25.9	28.9	3	3/9
Experimentals													
FP2112	CAN-exp.	24.4	28.7	22.3	23.4	29.3	30.6	22.5	32.0	24.6	28.5	5	4/9
FP2114	CAN-exp.	21.3	23.1	18.9	20.8	29.3	30.4	20.3	31.3	22.4	26.5	23	1/9
FP2118	CAN-exp.	22.1	24.9	20.6	21.5	21.9	28.3	19.5	30.4	21.0	26.2	24	3/9
FP2119	CAN-exp.	29.3	29.2	17.1	18.6	28.4	30.7	25.1	34.9	24.9	28.2	9	3/9
FP2137	CAN-exp.	28.0	--	20.9	--	39.0	--	--	--	--	--	--	3/3
N2010B	ND-exp.	25.8	--	19.4	--	33.3	--	22.7	--	25.2	--	--	1/6
N2014	ND-exp.	28.1	--	19.6	--	27.4	--	21.7	--	24.2	--	--	1/6
N320	ND-exp.	29.5	--	18.6	--	28.2	--	23.1	--	24.8	--	--	1/6
N325	ND-exp.	24.1	--	22.1	--	31.1	--	22.5	--	24.9	--	--	2/6
Grand Mean		25.6	26.9	20.4	21.4	28.3	30.1	22.5	32.3	24.0	27.6		
LSD.10		3.2	ns^	2.4	ns	4.8	ns	3.5	ns	2.7	ns		
Minimum yield of top group		26.3	--	20.3	--	34.2	--	23.8	--	23.4	--		
C.V.		9.3	11.4	8.7	13.5	12.3	11.2	11.3	10.1	11.2	10.0		

* Yield stability = number of times in top yield group/total number of tests having significant differences.
^ ns = differences among the varieties were not statistically significant.

Table 2. Characteristics of flax varieties.

Variety	Origin -Year	Days to Flower	Seed Size	Color		Statewide Averages				Lodgng (1-9)*	Disease Resistance	
				Flower	Seed	Oil %	Height (cm)	Yield (bu/A) 2005	Yield (bu/A) 3-yr		Wilt	Rust
		-2-				-11-	-11-	-4-	-10-	-2-		
AC Carnduff	CAN-99	53	Small	Blue	Brown	40.4	56	25.1	28.9	1.3	MR	R
AC Hanley	CAN-02	51	Small	Blue	Brown	39.0	52	23.5	27.1	2.2	MR	R
AC Watson	CAN-97	50	Med-Lg	Blue	Brown	40.5	55	22.5	27.3	1.0	MS	R
Carter	ND-05	51	Small	Blue	Yellow	40.1	54	26.1	28.1	1.5	MS	R
Cathay	ND-97	52	Medium	Blue	Brown	40.6	57	23.9	26.1	1.0	R	R
CDC Arras	CAN-00	54	Medium	Blue	Brown	40.5	57	25.2	29.4	1.0	R	R
CDC Bethume	CAN-00	52	Medium	Blue	Brown	40.3	55	23.2	28.2	1.8	MR	R
CDC Mons	CAN-03	53	Small	Blue	Brown	40.2	53	24.0	27.5	1.0	MR	R
CDC Normandy	CAN-96	51	Med-Sm	Blue	Brown	40.2	56	25.1	27.5	1.2	MR	R
CDC Valour	CAN-97	49	Medium	Blue	Brown	39.5	55	23.7	26.6	2.3	S	R
Linora	CAN-92	50	Med-Sm	Blue	Brown	40.5	55	20.1	27.3	2.2	MR	R
Linott	CAN-66	51	Med-Sm	Blue	Brown	40.2	58	24.2	26.8	1.7	MS	R
McGregor	CAN-82	54	Medium	Blue	Brown	39.3	56	24.3	26.7	1.0	MR	R
Nekoma	ND-02	51	Med-Sm	Blue	Brown	40.4	54	25.0	27.9	1.0	S	R
Omega	ND-90	51	Medium	Blue	Yellow	40.6	54	23.3	25.5	1.5	MS	R
Pembina	ND-97	51	Med-Sm	Blue	Brown	40.3	56	24.1	27.7	1.0	R	R
Prairie Blue	CAN-03	51	Small	Blue	Brown	41.2	54	23.4	27.6	1.0	MR	R
Rahab 94	SD-94	51	Medium	Blue	Brown	40.8	54	25.1	28.7	1.0	MR	R
Selby	SD-00	52	Medium	Blue	Brown	40.6	58	25.7	28.3	1.3	MR	R
Verne 93	SD-93	49	Med-Sm	Blue	Brown	40.3	55	22.7	26.7	1.8	R	R
Webster	SD-98	54	Med-Sm	Blue	Brown	40.9	58	25.5	28.5	1.0	MR	R
York	ND-02	53	Medium	Blue	Brown	39.2	54	25.9	28.9	1.0	MR	R
Experimentals												
FP2112	CAN-exp.	--	Medium	Blue	Brown	41.1	56	24.6	28.5	2.0	S	R
FP2114	CAN-exp.	--	Large	Blue	Brown	40.4	52	22.4	26.5	2.2	MR	R
FP2118	CAN-exp.	--	Med-Lg	Blue	Brown	41.0	56	21.0	26.2	3.0	R	R
FP2119	CAN-exp.	--	Medium	Blue	Brown	39.6	51	24.9	28.2	1.3	S	R
FP2137	CAN-exp.	--	--	Blue	Brown	--	--	--	--	--	--	--
N2010B	ND-exp.	--	Medium	Blue	Brown	--	--	25.2	--	--	MR	R
N2014	ND-exp.	--	Large	Blue	Brown	--	--	24.2	--	--	MR	R
N320	ND-exp.	--	Med-Sm	Blue	Brown	--	--	24.8	--	--	--	R
N325	ND-exp.	--	Medium	Blue	Brown	--	--	24.9	--	--	--	R
Grand Mean		51				40.3	55	24.0	27.6	1.5		
LSD.10		ns^				0.4	2	2.7	ns	1.5		
C.V.		2.3				1.7	5.3	11.2	10.0	85.3		

* Lodging rated on a scale of 1 to 9, where 1=no lodging and 9=flat.
^ ns = differences among the varieties were not statistically significant.

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Sunflower

2006 South Dakota Hybrid Performance Trials

Oilseed

Confection

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List of Tables

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EC909-06: PDF December 2006

Sunflower

2006 South Dakota Hybrid Performance Trials
Oilseed and Confection

Kathleen Grady, oilseed breeder and Extension specialist
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SDSU Plant Science Department

Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that a hybrid may or may not be the best yielder at all locations but that it ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical way to indicate if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Eureka oilseed test (Table 4) could be repeated in 2007 exactly as it was in 2006, the yield ranking of a hybrid that yielded 1620 lb/A and one that yielded 1379 lb/A might change places since their yield difference (241 lb/A) is less than the indicated yield LSD value of 299 lb/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Eureka in 2006.

In contrast, a hybrid that yielded 1223 lb/A at Eureka in 2006 would likely be lower yielding than one that yielded 1620 lb/A if the two hybrids were grown again under similar conditions, because the difference between them in 2006 (1620 - 1223 = 397 lb/A) exceeded the LSD value of 299 lb/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait and is expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15–20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs.

To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20–25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease control are planting resistant or tolerant hybrids and a minimum of 4 years rotation between successive sunflower crops.

Most sunflower hybrids in the U.S. have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and two or more races of rust. Consult the seed company for information on the reaction of a particular hybrid to these and other diseases that may pose a risk in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2006 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Eureka, Reliance, Miller, and Onida). Entries in the oilseed sunflower trials included traditional oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. Non-oilseed (confection) sunflower trials were conducted at Miller and Onida. Trial sites are indicated on the map (Fig 1). Lists of hybrids planted at each site appear in Tables 2 and 3.

Climate

The 2006 growing season was generally hot and dry in the major sunflower growing regions of South Dakota. Climate conditions near the sunflower test sites are presented in Table 1. May through August (especially July) temperatures were warmer than normal at all locations. September and October were cooler than normal. The first killing frost occurred on October 12 at all sites.

All locations had below normal precipitation in May, June, July, and October and above normal precipitation in September. Eureka, Miller, and Onida also had above normal precipitation in August. Storms in August at Onida and Miller were accompanied by high winds that caused considerable lodging and leaning of plants in the sunflower plots.

Experimental Methods

Plots at all locations consisted of four rows 25 feet long and spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62–66).

All plots were overseeded, but emergence was poor at all locations and thinning was not necessary for most plots. Stands were poorest at Reliance, and the first replication was omitted from all analyses. Stands were variable at Onida, Eureka, and Miller.

Seed of most of the hybrids entered in the trials was pre-treated with an insecticide, fungicide, or both, while some was not treated. Seed treatments used on individual hybrids are listed in Tables 2 and 3. There was no major flea-beetle damage at any of the test sites.

The Reliance, Miller, and Onida trials were seeded no-till. Eureka was planted with conventional tillage practices. Spartan herbicide was applied for weed control at all locations.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Maturity notes were not taken, due to excessive damage from drought and lodging.

Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was minimal at Eureka and Reliance for most hybrids. Onida and Miller had many lodged and leaning plants due to wind damage. Many of the severely leaning plants at Onida had little to no seed. Seed set was also poor on many standing plants due to drought.

Plots were harvested with a Gleaner Model K combine fitted with a two-row all row crop header. All seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis of oven-dry samples and converted to 10% moisture. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens.

A one-pint subsample of seed from each plot of the confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 4–8 (oilseed) and 9–10 (confection). Yields of oilseed hybrids were highest at Miller, averaging 1446 lb/A over all hybrids tested. Due to poor stands, drought, and wind damage, yields at Onida and Reliance were too variable for accurate estimations and are not reported. Confection seed yields averaged 1330 lb/A at Miller and were too variable to report at Onida.

In the tables that follow, hybrids are listed alphabetically by brand. Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

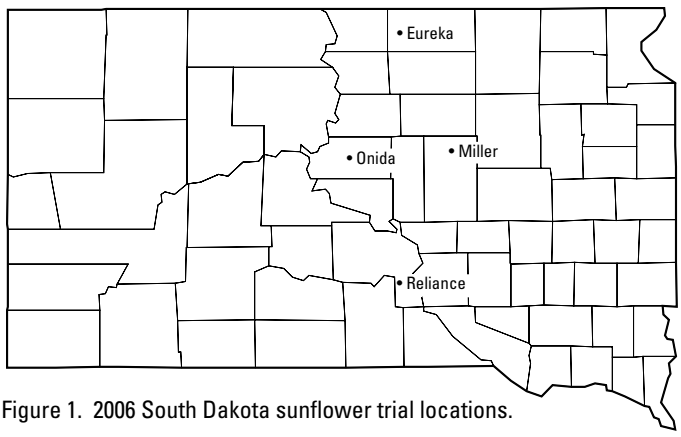

Figure 1. 2006 South Dakota sunflower trial locations.

Table 1. Climate summary for nearest weather stations to 2006 South Dakota sunflower test sites and departures from normal.

LOCATION-MONTH	2006 TEMPERATURE			TOTAL PRECIP IN.	DEPARTURE FROM NORMAL^			
	AVG MAX.	AVG MIN.	MEAN		MAX TEMP	MIN TEMP	AVG TEMP	PRECIP IN.
	----------°F----------				----------°F----------			
Reliance*								
May	76	45	60	0.55	4.6	0.6	2.6	-3.1
June	87	56	72	1.27	5.8	1.9	3.8	-2.1
July	97	65	81	1.00	8.2	5.5	6.8	-1.9
August	90	60	75	1.45	2.1	2.2	2.2	-0.8
September	71	48	59	4.36	-6.6	-0.5	-3.6	2.4
October	61	34	48	0.15	-1.6	-2.0	-1.8	-1.6
Eureka*								
May	72	45	58	1.04	1.8	1.5	1.6	-1.6
June	82	55	69	0.71	3.5	2.4	2.9	-2.5
July	94	63	78	0.72	8.9	4.6	6.7	-2.1
August	85	60	73	3.20	1.4	3.6	2.5	0.9
September	67	46	56	2.72	-6.4	0.5	-3.0	1.3
October	55	30	43	0.15	-4.0	-3.3	-3.7	-1.5
Miller*								
May	71	44	58	0.41	3.0	-2.0	0.5	-2.7
June	82	56	69	1.00	3.8	0.5	2.1	-1.9
July	94	64	79	0.31	8.4	2.9	5.6	-2.3
August	85	60	72	3.36	1.3	1.9	1.6	1.4
September	68	46	57	4.05	-5.7	-2.0	-3.9	2.3
October	58	31	44	0.13	-3.2	-3.6	-3.4	-1.6
Onida 4 NW*								
May	75	43	59	0.61	4.6	-1.4	1.5	-2.2
June	86	55	71	1.35	5.9	1.6	3.8	-1.8
July	97	64	81	0.29	9.6	5.4	7.5	-2.4
August	88	59	73	5.91	1.7	2.3	2.0	3.8
September	69	46	57	2.81	-7.3	-0.4	-3.9	1.3
October	56	31	44	0.06	-4.9	-3.1	-4.1	-1.5

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2006 observations to 30-yr averages (1971–2000) for each site.

Table 2. Hybrids tested in the 2006 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Eureka	Miller	Onida	Reliance
Advanta Pacific, LLC	AP533NS	NS		Ap/Max/C	X	X	X	X
Advanta Pacific, LLC	AP534NS/CL	NS	CL	Ap/Max/C	X	X	X	X
Advanta Pacific, LLC	F30250	NS		Ap/Max/C	X	X	X	X
Advanta Pacific, LLC	F41271	NS		Ap/Max/C	X	X	X	X
Advanta Pacific, LLC	F51320	NS		Ap/Max/C	X	X	X	X
Advanta Pacific, LLC	F51321	NS		Ap/Max/C	X	X	X	X
Croplan Genetics	356 NS	NS			X		X	X
Croplan Genetics	378 DMR	HO			X		X	X
Dahlgren	4421	NS		CDM		X	X	
Dekalb	DKF 3875	Trad.		CDM	X		X	X
Dekalb	DKF 38-80 CL	Trad.	CL	CDM	X		X	X
Dekalb	DKF35-10 NS	NS/DM		CDM	X		X	X
Dekalb	DKF37-31NS	NS		CDM	X		X	X
Dekalb	DKF38-30 NS	NS		CDM	X		X	X
Dekalb	DKF38-45NS	NS		CDM	X		X	X
Dyna-Gro	94T90	Trad.		CDM	X	X	X	X
Dyna-Gro	95N70	NS		CDM				X
Dyna-Gro	FX06794	NS		CDM	X	X	X	X
Dyna-Gro	FX06483	NS	CL	CDM	X	X	X	X
Garst Seed	4420 NS	NuSun		Cruiser	X	X	X	X
Garst Seed	4651 NS	NuSun		Cruiser	X	X	X	X
Garst Seed	4665 HO	HO		Cruiser	X	X	X	X
Garst Seed	4668 NS/CL	NuSun	CL	Cruiser	X	X	X	X
Garst Seed	4704NS	NuSun		Cruiser	X	X	X	X
Integra Seed Ltd	INT 432	Trad.		Cruiser	X		X	
Integra Seed Ltd	INT 536NSDM	NSDM		Cruiser	X	X	X	
Integra Seed Ltd	INT 549NS	NS		Cruiser		X		
Integra Seed Ltd	INT 550NS	NS		Cruiser	X	X	X	X
Integra Seed Ltd	INT 555NS	NS		Cruiser				X
Integra Seed Ltd	INT 735NSCL	NS	CL	Cruiser	X		X	
Integra Seed Ltd	INT 737NSCL	NS	CL	Cruiser	X	X		X
Interstate Seed	HyOleic 120	HO		CDM	X	X	X	
Interstate Seed	Hysun 450	NS		CDM	X		X	
Interstate Seed	Hysun 454	NS		CDM	X		X	
Interstate Seed	Hysun 521	NS		CDM	X	X	X	
Interstate Seed	IS 4668 NS/CL	NS	CL	CDM	X	X	X	
Interstate Seed	IS 4704 NS	NS		CDM	X	X	X	
Interstate Seed	IS 5770 NS	NS		CDM	X	X	X	
Interstate Seed	IS 5880 NS/CL	NS	CL	CDM	X	X	X	
King Seed Inc.	SunKing 4404NS/CL	NS	CL	Cruiser	X	X	X	X
King Seed Inc.	SunKing 4500NS	NS		Cruiser	X	X	X	X
King Seed Inc.	SunKing 4505	Trad.		Cruiser	X	X	X	X
Legend Seeds	LSX138N	NuSun		Cruiser	X	X	X	X
Legend Seeds	LSF 121N	NuSun		Cruiser	X	X	X	X
Legend Seeds	LSF 142N	NuSun		Cruiser	X	X	X	X
Legend Seeds	LSF 223NCL	NuSun	CL	Cruiser	X	X	X	X
Monsanto	MH4436	NS		CDM	X		X	X
Monsanto	MH4437 CL	NS	CL	CDM	X		X	X
Monsanto	MH4438 CL	NS	CL	CDM	X		X	X
Monsanto	MH6635	HO		CDM	X		X	X
Monsanto	MH5434	HO		CDM	X		X	X
Monsanto	MH5436	NS/DM		CDM	X		X	X
Monsanto	MH5437	HO		CDM	X		X	X

Table 2 (cont.).

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Eureka	Miller	Onida	Reliance
Monsanto	MH5438	HO		CDM	X		X	X
Monsanto	MH6636	NS		CDM	X		X	X
Mycogen Seeds	8D310	NuSun		CDM	X	X	X	X
Mycogen Seeds	8H350DM	HO		CDM	X	X	X	X
Mycogen Seeds	8H419CL	HO	CL	CDM	X	X	X	X
Mycogen Seeds	8N352	NuSun		CDM	X	X	X	X
Mycogen Seeds	8N386CL	NuSun	CL	CDM	X	X	X	X
Mycogen Seeds	8N453DM	NuSun		CDM	X	X	X	X
Mycogen Seeds	8N510	NuSun		CDM	X	X	X	X
Mycogen Seeds	8N520DM	NuSun		CDM	X	X	X	X
Mycogen Seeds	8N462DM	NuSun		CDM	X	X	X	X
Pannar Genetics	PEX 2961	NS		Cruiser		X	X	
Pannar Genetics	PEX 2968	Trad.		Cruiser		X	X	
Pannar Genetics	PEX 2986	NS		Cruiser	X	X	X	X
Pannar Genetics	PEX 3052	NS		Cruiser	X			
Pannar Seed Inc.	PAN 7813NS	NuSun		Apron+Cruiser	X	X	X	
Pannar Seed Inc.	PAN 7924NS	NuSun		Apron+Cruiser	X	X	X	X
Pannar Seed Inc.	PAN 9404	Trad.		Apron+Cruiser		X	X	
Pannar Seed Inc.	PAN 9501	Trad.		Apron+Cruiser		X	X	X
Pannar Seed Inc.	PAN EX2422	NuSun		Apron+Cruiser	X	X	X	
Pannar Seed Inc.	PAN EX2453	NuSun		Apron+Cruiser	X	X	X	
Pannar Seed Inc.	PAN EX2853	NuSun		Apron+Cruiser		X	X	X
Pioneer Hi-Bred	6423	HO		Cruiser+Dyn	X	X	X	X
Pioneer Hi-Bred	6444	HO		Cruiser+Dyn	X	X	X	X
Pioneer Hi-Bred	6447	HO		Cruiser+Dyn	X	X	X	X
Pioneer Hi-Bred	63M80	NS		Cruiser+Dyn	X	X	X	X
Pioneer Hi-Bred	63M91	NS		Cruiser+Dyn	X	X	X	X
Pioneer Hi-Bred	64H41	HO		Cruiser+Dyn	X	X	X	X
Producers Hybrids	XSF001NSCL	NuSun	CL	Cruiser		X	X	X
Producers Hybrids	SF7203	Trad.		Cruiser		X	X	X
Producers Hybrids	SF7303	NuSun		Cruiser		X	X	X
Proseed	9441	NuSun			X	X	X	X
Proseed	CL-51	NuSun	CL		X	X	X	X
Proseed	E-85	HO			X	X	X	X
Scherr's Seed LLC	SS630CL	NuSun	CL	Metalaxyl	X			
Scherr's Seed LLC	SS674	NuSun		Metalaxyl	X			
Seeds 2000	Barracuda	NuSun	CL	Cruiser	X	X	X	X
Seeds 2000	Blazer	NuSun		Cruiser	X	X	X	X
Seeds 2000	Sierra	HO		Cruiser	X	X	X	X
Seeds 2000	X5854	Con-oil		Cruiser	X			
Triumph Seed	645	NS		CDM	X	X	X	X
Triumph Seed	658	NS		CDM			X	
Triumph Seed	660CL	NS	CL	CDM		X	X	
Triumph Seed	820HO	HO		CDM	X			
Triumph Seed	845HO	HO		CDM	X	X	X	X
Triumph Seed	s672	NS		CDM	X	X	X	X
Triumph Seed	s675	NS		CDM	X	X	X	X
Triumph Seed	s678	NS		CDM	X	X	X	X
Triumph Seed	TRXs5423	NS		CDM		X		
Zuelzer & Son Canada	ZSun1	HO			X	X	X	X
USDA	Hyb. 894 (check)	Trad.			X	X	X	X
				Total hybrids	90	75	95	77

* Ap = Apron, C = Cruiser, CDM = Cruiser DM Pak, Max = Maxim, Met = Metalaxyl, Dyn = Dynasty

Table 3. Hybrids tested in the 2006 South Dakota confection hybrid sunflower trials.

Brand	Hybrid	Hybrid Type	Seed* Treatmnt	Miller	Onida
CHS	RH112	Confect.	CDM/Apron	X	X
CHS	RH1122	Confect.	CDM/Apron	X	X
Dahlgren	D 9541	Confect.	Cruiser-DM	X	X
Dahlgren	D 9531	Confect.	Cruiser-DM	X	X
Mycogen Seeds	8C481	Confect.		X	X
Mycogen Seeds	8C482	Confect.		X	X
Red River Commodities	2214	Confect.	Cruiser-DM	X	X
Red River Commodities	2215	Confect.	Cruiser-DM	X	X
Red River Commodities	2216	Confect.	Cruiser-DM	X	X
Red River Commodities	8050	Confect.	Cruiser-DM	X	X
Seeds 2000	X3967	Confect.	Cruiser	X	X
Seeds 2000	X3938	Confect.	Cruiser	X	X
Seeds 2000	X3638	Confect.	Cruiser	X	X
Seeds 2000	X3654	Confect.	Cruiser	X	X
Sunflower R & D	6132	Confect.	Isotox	X	
Sunflower R & D	6009	Confect.	Isotox		X
Triumph Seed	777C	Confect.	CDM	X	
Triumph Seed	767C	Confect.	CDM	X	
USDA	924 (check)	Confect.		X	X
			Total hybrids	18	16

*C = Cruiser, CDM = Cruiser DM Pak, Max = Maxim, Met = Metalaxyl, Dyn = Dynasty

Table 4. Oilseed sunflower hybrid trial - Eureka, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006	2005^	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific, LLC	AP533NS	NS	776	--	--	42.5	94	4	10.2	30.7	11.5
Advanta Pacific, LLC	AP534NS/CL	NS,CL	1223	2771	1997	42.5	104	3	13.8	30.6	13.1
Advanta Pacific, LLC	F30250	NS	1149	--	--	42.3	102	1	12.7	30.8	12.1
Advanta Pacific, LLC	F41271	NS	1071	--	--	42.9	99	2	11.6	29.2	12.0
Advanta Pacific, LLC	F51320	NS	905	--	--	44.0	101	5	11.6	30.6	12.2
Advanta Pacific, LLC	F51321	NS	1218	--	--	42.9	93	3	13.3	28.6	12.1
Croplan Genetics	356 NS	NS	1332	--	--	42.6	93	1	12.2	30.8	14.2
Croplan Genetics	378 DMR	HO	885	2646	1766	42.8	110	9	11.9	31.9	10.9
Dekalb	DKF 3875	Trad.	1207	3169	2188	44.7	95	2	13.1	31.0	11.0
Dekalb	DKF 38-80 CL	Trad.,CL	1260	2321	1791	45.3	95	5	11.5	30.7	13.9
Dekalb	DKF35-10 NS	NS/DM	1285	--	--	44.0	99	4	12.1	32.1	12.6
Dekalb	DKF37-31NS	NS	1269	--	--	43.7	93	4	12.5	31.0	13.1
Dekalb	DKF38-30 NS	NS	1285	2590	1937	43.9	100	2	13.0	30.8	12.1
Dekalb	DKF38-45NS	NS	1172	--	--	44.0	89	6	12.6	30.1	12.0
Dyna-Gro	94T90	Trad.	1203	2657	1930	43.8	110	4	12.3	30.8	12.8
Dyna-Gro	FX06794	NS	1111	--	--	42.9	96	4	13.1	30.4	11.7
Dyna-Gro	FX06483	NS,CL	1379	--	--	43.4	108	2	12.8	29.6	14.9
Garst Seed	4420 NS	NS	1189	--	--	42.4	110	2	12.5	30.4	11.0
Garst Seed	4651 NS	NS	999	--	--	43.4	107	3	11.9	29.3	10.0
Garst Seed	4665 HO	HO	1138	--	--	43.4	124	8	12.4	30.6	11.3
Garst Seed	4668 NS/CL	NS,CL	1620	--	--	42.2	109	4	13.1	30.1	14.6
Garst Seed	4704 NS	NS	838	--	--	42.4	96	1	12.3	30.6	13.6
IntegraSeed Ltd	INT 432	Trad.	748	--	--	44.6	112	2	11.5	29.3	13.5
IntegraSeed Ltd	INT 536NSDM	NS/DM	1029	--	--	42.3	95	2	12.5	30.7	11.6
IntegraSeed Ltd	INT 550NS	NS	1116	--	--	42.7	92	3	13.4	31.7	12.6
IntegraSeed Ltd	INT 735NSCL	NS,CL	1024	--	--	42.6	100	3	12.8	29.5	11.3
IntegraSeed Ltd	INT 737NSCL	NS,CL	1495	--	--	41.9	108	8	13.0	30.3	15.1
Interstate Seed	HyOleic 120	HO	931	2536	1734	43.6	110	4	11.0	30.6	10.6
Interstate Seed	Hysun 450	NS	1123	2807	1965	43.1	91	5	13.2	29.2	10.9
Interstate Seed	Hysun 454	NS	1160	--	--	44.8	108	7	12.5	30.3	10.1
Interstate Seed	Hysun 521	NS	1004	--	--	42.8	91	4	12.5	30.6	10.7
Interstate Seed	IS 4668 NS/CL	NS,CL	1403	--	--	42.3	107	2	14.2	31.0	13.5
Interstate Seed	IS 4704 NS	NS	967	2385	1676	44.3	99	0	13.0	29.3	11.8
Interstate Seed	IS 5770 NS	NS	1466	--	--	43.1	105	1	12.3	31.2	11.1
Interstate Seed	IS 5880 NS/CL	NS,CL	954	--	--	43.1	105	1	13.5	29.9	9.5
King Seed Inc.	SunKing 4404NS/CL	NS,CL	1326	--	--	40.5	100	6	12.8	30.2	14.6
King Seed Inc.	SunKing 4500NS	NS	1296	--	--	42.5	113	5	12.8	30.8	10.6
King Seed Inc.	SunKing 4505	Trad.	1321	--	--	45.9	114	4	12.6	29.7	11.5
Legend Seeds	LSX 138N	NS	1054	--	--	43.8	106	3	12.0	30.0	12.1
Legend Seeds	LSF 121N	NS	979	--	--	43.9	104	2	11.6	30.3	13.2
Legend Seeds	LSF 142N	NS	1232	--	--	43.8	96	1	12.6	30.7	12.6
Legend Seeds	LSF 223NCL	NS,CL	1548	--	--	43.4	108	1	13.4	29.8	14.9
Monsanto	MH4436	NS	1221	2890	2055	42.5	100	17	12.1	31.2	13.8
Monsanto	MH4437 CL	NS,CL	1085	--	--	43.3	93	8	11.8	28.7	16.2
Monsanto	MH4438 CL	NS,CL	1111	--	--	43.0	110	8	11.6	29.4	14.4
Monsanto	MH6635	HO	1091	--	--	43.0	105	4	11.1	29.3	15.3
Monsanto	MH5434	HO	1464	2740	2102	45.0	117	-0	11.9	30.5	14.4
Monsanto	MH5436	NS/DM	1007	--	--	44.3	92	8	10.1	26.6	13.1
Monsanto	MH5437	HO	1369	--	--	44.1	102	4	10.7	30.0	12.5

Table 4 (cont.). Eureka, SD 2006

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006	2005^	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Monsanto	MH5438	HO	1276	--	--	44.1	108	4	12.1	30.0	12.1
Monsanto	MH6636	NS	1157	--	--	44.0	105	5	11.9	29.7	14.1
Mycogen Seeds	8D310	NS	850	3061	1955	43.0	100	-0	12.5	29.3	10.8
Mycogen Seeds	8H350DM	HO	828	3718	2273	44.1	97	3	12.0	30.0	11.4
Mycogen Seeds	8H419CL	HO,CL	1127	3258	2193	42.9	94	2	12.7	29.8	12.3
Mycogen Seeds	8N352	NS	1219	3056	2137	43.6	92	0	12.4	30.5	13.0
Mycogen Seeds	8N386CL	NS,CL	784	2790	1787	42.8	104	5	12.2	28.0	11.3
Mycogen Seeds	8N453DM	NS	916	3093	2005	44.4	101	0	11.6	29.4	11.5
Mycogen Seeds	8N510	NS	1541	3226	2384	42.6	100	3	12.7	29.1	12.9
Mycogen Seeds	8N520DM	NS	1284	--	--	43.6	101	4	13.3	29.1	11.8
Mycogen Seeds	8N462DM	NS	1178	--	--	44.4	96	1	13.6	31.4	11.2
Pannar Genetics	PEX 2986	NS	1160	--	--	42.9	103	1	13.6	31.0	8.8
Pannar Genetics	PEX 3052	NS	977	--	--	43.6	96	7	12.0	28.9	9.1
Pannar Seed Inc.	PAN 7813NS	NS	1406	--	--	41.6	102	4	14.6	30.9	11.7
Pannar Seed Inc.	PAN 7924NS	NS	1333	--	--	42.9	111	2	13.2	29.4	11.5
Pannar Seed Inc.	PAN EX2422	NS	1203	--	--	42.6	101	1	13.2	28.7	12.3
Pannar Seed Inc.	PAN EX2453	NS	956	--	--	42.6	105	9	12.8	30.5	12.3
Pioneer Hi-Bred	6423	HO	904	--	--	42.9	107	4	11.3	30.2	12.0
Pioneer Hi-Bred	6444	HO	888	--	--	43.8	113	3	10.6	31.9	10.5
Pioneer Hi-Bred	6447	HO	1182	--	--	42.9	105	7	12.2	31.3	12.0
Pioneer Hi-Bred	63M80	NS	1107	2426	1766	43.9	88	6	11.4	30.8	12.3
Pioneer Hi-Bred	63M91	NS	1035	2348	1691	41.9	101	5	12.0	30.5	11.9
Pioneer Hi-Bred	64H41	HO	817	2443	1630	43.1	109	5	12.9	29.7	12.3
Proseed	9441	NS	690	2697	1694	42.9	107	1	11.0	29.2	11.1
Proseed	CL-51	NS,CL	954	--	--	43.8	103	6	11.3	29.3	12.5
Zuelzer & Son Canada	ZSun1	HO	1016	--	--	43.6	106	13	10.9	27.5	10.2
Proseed	E-85	HO	1242	--	--	43.6	113	5	11.5	29.6	13.1
Scherr's Seed LLC	SS630CL	NS,CL	1067	2300	1684	43.9	115	4	12.8	30.3	11.5
Scherr's Seed LLC	SS674	NS	1251	3071	2161	43.4	95	3	12.9	30.0	12.7
Seeds 2000	Barracuda	NS,CL	1124	2203	1663	43.5	102	-0	14.0	30.3	12.8
Seeds 2000	Blazer	NS	1253	3334	2294	43.9	83	4	12.6	30.8	11.7
Seeds 2000	Sierra	HO	1022	3087	2055	41.9	94	0	13.9	29.4	12.7
Seeds 2000	X5854	Con-oil	1151	--	--	42.6	94	4	11.4	28.9	10.7
Triumph Seed	645	NS	1616	3526	2571	43.6	106	3	13.8	30.1	14.4
Triumph Seed	820HO	HO	1045	--	--	44.3	106	5	11.3	28.5	11.1
Triumph Seed	845HO	HO	1309	--	--	43.3	99	6	12.4	31.0	13.6
Triumph Seed	s672	NS	1031	3134	2082	44.4	71	1	12.9	30.9	16.4
Triumph Seed	s675	NS	1324	3606	2465	43.5	75	3	14.0	30.4	15.1
Triumph Seed	s678	NS	1328	--	--	43.4	83	1	14.0	30.3	13.9
USDA	Hyb. 894 (check)	Trad.	977	2370	1674	45.8	92	0	11.3	28.0	10.8
	Grand mean		1144	2733	1939	43.3	101	4	12.4	30.1	12.3
	LSD 5%		299	590		1.6	12	5	1.3	1.8	2.2
	C.V.		18.8	15.5		2.6	8.2	97.4	7.4	4.3	12.8

* NS = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield, DM = downy mildew resistant.
^ 2005 yields are from Ipswich, SD.
Planted June 1, 2006. Harvested November 1, 2006.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: James M. Fischer, Eureka, SD.

Table 5. Oilseed sunflower hybrid trial - Miller, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006	2005	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific, LLC	AP533NS	NS	1025	--	--	41.9	119	4	13.0	27.6	14.3
Advanta Pacific, LLC	AP534NS/CL	NS,CL	1527	2862	2194	42.5	119	13	13.2	27.9	13.6
Advanta Pacific, LLC	F30250	NS	1142	--	--	42.1	113	12	12.7	27.4	12.6
Advanta Pacific, LLC	F41271	NS	1207	--	--	41.5	110	7	12.7	28.5	11.2
Advanta Pacific, LLC	F51320	NS	1100	--	--	41.3	104	6	12.6	28.2	13.1
Advanta Pacific, LLC	F51321	NS	1397	--	--	41.0	105	1	13.1	27.9	15.4
Dahlgren	4421	NS	1364	2507	1935	41.3	123	9	11.6	27.8	15.8
Dyna-Gro	94T90	Trad.	1419	3156	2287	43.1	120	4	12.4	28.2	16.6
Dyna-Gro	FX06794	NS	1621	--	--	42.2	99	4	13.6	27.6	15.7
Dyna-Gro	FX06483	NS,CL	1626	--	--	42.2	108	4	12.5	27.7	15.6
Garst Seed	4420 NS	NS	1268	--	--	42.0	105	9	13.0	27.6	15.0
Garst Seed	4651 NS	NS	1082	--	--	43.1	123	10	14.3	27.9	11.1
Garst Seed	4665 HO	HO	1267	--	--	42.8	115	13	12.1	28.4	8.8
Garst Seed	4668 NS/CL	NS,CL	1477	--	--	41.5	123	13	13.4	27.9	16.2
Garst Seed	4704 NS	NS	998	--	--	41.2	104	6	12.8	26.5	15.4
IntegraSeed Ltd	INT 536NSDM	NS,DM	1373	--	--	43.2	112	10	13.0	28.7	15.9
IntegraSeed Ltd	INT 549NS	NS	1556	--	--	42.0	104	3	13.1	28.8	14.2
IntegraSeed Ltd	INT 550NS	NS	1114	--	--	42.7	110	12	13.3	28.0	14.3
IntegraSeed Ltd	INT 737NSCL	NS,CL	1551	--	--	41.0	132	9	13.8	27.2	16.4
Interstate Seed	HyOleic 120	HO	1405	--	--	42.7	122	6	12.5	28.6	14.6
Interstate Seed	Hysun 521	NS	1125	--	--	41.9	107	16	12.6	29.3	13.6
Interstate Seed	IS 4668 NS/CL	NS,CL	1707	--	--	42.4	117	9	13.1	28.0	15.6
Interstate Seed	IS 4704 NS	NS	1189	--	--	42.3	111	6	12.4	27.3	13.8
Interstate Seed	IS 5770 NS	NS	1342	--	--	42.7	116	3	12.4	29.7	13.1
Interstate Seed	IS 5880 NS/CL	NS,CL	924	--	--	41.9	114	9	12.7	28.1	13.0
King Seed Inc.	SunKing 4404NS/CL	NS,CL	1760	--	--	41.6	116	5	13.2	28.6	16.4
King Seed Inc.	SunKing 4500NS	NS	1653	--	--	41.2	106	5	12.8	28.4	13.7
King Seed Inc.	SunKing 4505	Trad.	911	--	--	43.3	120	-0	12.3	27.0	17.0
Legend Seeds	LSX 138N	NS	1276	--	--	42.4	120	10	12.9	27.6	12.7
Legend Seeds	LSF 121N	NS	1214	--	--	42.3	117	9	12.8	27.8	13.5
Legend Seeds	LSF 142N	NS	1852	--	--	42.9	104	4	13.6	27.0	15.4
Legend Seeds	LSF 223NCL	NS,CL	1540	--	--	41.3	104	4	13.0	27.5	15.9
Mycogen Seeds	8D310	NS	1602	3096	2349	41.1	119	9	11.9	27.8	16.0
Mycogen Seeds	8H350DM	HO	1248	3157	2203	42.8	118	11	12.5	28.4	15.3
Mycogen Seeds	8H419CL	HO,CL	1719	3045	2382	43.4	128	0	12.9	27.9	17.0
Mycogen Seeds	8N352	NS	1802	3324	2563	44.2	107	6	13.0	29.7	14.7
Mycogen Seeds	8N386CL	NS,CL	1453	2744	2098	42.9	132	6	12.8	28.2	13.7
Mycogen Seeds	8N453DM	NS	1498	3097	2298	44.2	108	4	12.4	28.7	14.7
Mycogen Seeds	8N510	NS	1605	3017	2311	42.2	113	2	12.9	28.3	16.5
Mycogen Seeds	8N520DM	NS	1596	--	--	41.9	110	6	13.0	27.5	16.3
Mycogen Seeds	8N462DM	NS	1847	--	--	43.1	119	11	13.3	28.8	13.3
Pannar Genetics	PEX 2961	NS	1214	--	--	41.6	125	3	12.7	29.5	14.9
Pannar Genetics	PEX 2968	Trad.	1079	--	--	43.5	124	10	12.6	28.5	14.2
Pannar Genetics	PEX 2986	NS	1699	--	--	40.8	116	12	12.7	29.1	14.3
Pannar Seed Inc.	PAN 7813NS	NS	1430	--	--	41.7	111	9	12.8	26.7	13.5
Pannar Seed Inc.	PAN 7924NS	NS	1560	--	--	42.1	123	9	13.5	26.7	15.5
Pannar Seed Inc.	PAN 9404	Trad.	1587	3066	2327	41.5	115	4	12.9	28.6	14.0
Pannar Seed Inc.	PAN 9501	Trad.	1542	2768	2155	40.8	136	3	12.5	28.6	16.2

Table 5 (cont.). Miller, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006	2005	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Pannar Seed Inc.	PAN EX2422	NS	1063	--	--	42.2	103	10	12.7	27.7	13.0
Pannar Seed Inc.	PAN EX2453	NS	1490	--	--	42.0	115	8	12.9	27.8	12.9
Pannar Seed Inc.	PAN EX2853	NS	1178	--	--	41.7	106	2	13.0	28.0	13.9
Pioneer Hi-Bred	6423	HO	1321	--	--	42.4	123	13	12.2	27.8	15.2
Pioneer Hi-Bred	6444	HO	1132	--	--	41.5	112	7	13.2	28.3	14.6
Pioneer Hi-Bred	6447	HO	1628	--	--	40.6	122	9	13.8	27.8	12.2
Pioneer Hi-Bred	63M80	NS	1277	3087	2182	41.7	119	9	12.8	27.4	13.5
Pioneer Hi-Bred	63M91	NS	1279	3033	2156	42.1	122	1	12.6	27.9	17.2
Pioneer Hi-Bred	64H41	HO	1439	2977	2208	42.2	117	3	12.6	29.2	15.7
Producers Hybrids	XSF001NSCL	NS,CL	1690	--	--	39.6	109	5	13.1	27.0	17.0
Producers Hybrids	SF7203	Trad.	1420	2982	2201	42.3	115	11	12.7	27.6	16.5
Producers Hybrids	SF7303	NS	2099	2866	2482	41.9	113	3	14.1	29.3	15.0
Proseed	9441	NS	987	2488	1737	42.8	124	17	12.5	26.3	10.8
Proseed	CL-51	NS,CL	640	--	--	41.8	113	12	12.6	28.4	14.2
Zuelzer & Son Canada	ZSun1	HO	1198	--	--	41.4	109	6	12.4	28.9	13.5
Proseed	E-85	HO	1478	--	--	41.6	123	10	12.8	27.0	12.1
Seeds 2000	Barracuda	NS,CL	1483	3050	2266	41.0	112	7	13.9	28.4	15.0
Seeds 2000	Blazer	NS	1821	3194	2507	42.9	99	7	12.9	29.8	13.6
Seeds 2000	Sierra	HO	1667	2932	2300	42.3	105	9	13.0	28.2	16.7
Triumph Seed	645	NS	1505	2888	2196	42.7	112	6	13.2	28.0	14.4
Triumph Seed	660CL	NS,CL	1893	--	--	41.9	104	4	13.2	27.0	16.3
Triumph Seed	845HO	HO	1894	--	--	41.7	107	8	13.8	26.7	15.3
Triumph Seed	s672	NS	1694	2790	2242	43.1	82	0	13.2	27.8	17.2
Triumph Seed	s675	NS	2274	--	--	43.0	96	3	13.3	27.8	15.9
Triumph Seed	s678	NS	2091	--	--	42.9	111	5	13.8	28.0	14.3
Triumph Seed	TRXs5423	NS	1966	--	--	43.1	75	1	12.7	28.9	15.6
USDA	Hyb. 894 (check)	Trad.	1323	2477	1900	42.8	103	12	12.9	27.8	9.8
	Grand mean		1446	2812	2129	42.1	113	7	12.9	28.0	14.5
	LSD 5%		392	473		1.6	11	8	0.7	1.3	2.4
	C.V.		19.4	12.1		2.8	6.7	80.1	4.1	3.4	11.7

* NS = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield, DM = downy mildew resistant.
Planted June 5, 2006. Harvested October 27, 2006.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Roger Bertsch, St. Lawrence, SD.

Table 6. Oilseed sunflower hybrid trial - Reliance, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006^	2005	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific, LLC	AP533NS	NS	--	--	--	40.2	118	3	14.0	29.9	10.6
Advanta Pacific, LLC	AP534NS/CL	NS,CL	--	--	--	40.4	110	4	15.2	30.9	13.0
Advanta Pacific, LLC	F30250	NS	--	--	--	40.1	108	1	15.9	31.8	10.9
Advanta Pacific, LLC	F41271	NS	--	--	--	40.1	117	0	18.5	29.8	6.5
Advanta Pacific, LLC	F51320	NS	--	--	--	40.3	108	3	14.1	32.4	13.0
Advanta Pacific, LLC	F51321	NS	--	--	--	40.2	112	3	18.1	30.3	14.3
Croplan Genetics	356 NS	NS	--	--	--	42.6	100	6	16.9	29.5	12.3
Croplan Genetics	378 DMR	HO	--	1863	--	40.4	123	3	15.0	27.2	8.7
Dekalb	DKF 3875	Trad.	--	2798	--	41.4	117	0	12.5	31.1	10.8
Dekalb	DKF 38-80 CL	Trad,CL	--	1875	--	39.8	109	5	15.6	30.3	10.0
Dekalb	DKF35-10 NS	NS/DM	--	--	--	42.4	118	5	15.0	28.8	10.3
Dekalb	DKF37-31NS	NS	--	--	--	41.1	102	3	13.9	31.4	10.7
Dekalb	DKF38-30 NS	NS	--	1251	--	40.9	112	4	14.4	31.6	13.7
Dekalb	DKF38-45NS	NS	--	--	--	42.2	120	-0	15.5	32.9	9.6
Dyna-Gro	94T90	Trad.	--	2282	--	42.8	130	0	16.1	31.0	15.3
Dyna-Gro	95N70	NS	--	--	--	42.3	115	4	16.3	32.1	14.9
Dyna-Gro	FX06794	NS	--	--	--	40.9	103	1	16.2	29.4	14.7
Dyna-Gro	FX06483	NS,CL	--	--	--	40.1	102	8	16.8	30.2	14.5
Garst Seed	4420 NS	NS	--	--	--	40.2	111	0	13.0	30.8	13.6
Garst Seed	4651 NS	NS	--	--	--	40.6	115	3	15.5	28.9	7.1
Garst Seed	4665 HO	HO	--	--	--	39.6	134	4	14.7	31.2	6.4
Garst Seed	4668 NS/CL	NS,CL	--	--	--	39.4	126	1	16.8	30.2	11.0
Garst Seed	4704 NS	NS	--	--	--	40.2	106	2	14.0	31.3	13.0
IntegraSeed Ltd	INT 550NS	NS	--	--	--	39.4	99	2	15.5	30.2	12.4
IntegraSeed Ltd	INT 555NS	NS	--	--	--	42.8	117	7	15.6	31.8	14.7
IntegraSeed Ltd	INT 737NSCL	NS,CL	--	--	--	40.3	113	4	19.2	28.8	14.3
King Seed Inc.	SunKing 4404NS/CL	NS,CL	--	--	--	39.5	117	2	20.4	28.7	11.1
King Seed Inc.	SunKing 4500NS	NS	--	--	--	41.8	118	2	16.3	31.8	12.9
King Seed Inc.	SunKing 4505	Trad.	--	--	--	42.3	118	0	15.5	30.1	13.3
Legend Seeds	LSX 138N	NS	--	--	--	41.4	118	2	14.0	34.0	12.3
Legend Seeds	LSF 121N	NS	--	--	--	38.8	118	1	15.7	29.6	10.0
Legend Seeds	LSF 142N	NS	--	--	--	40.9	93	0	16.7	30.4	12.5
Legend Seeds	LSF 223NCL	NS,CL	--	--	--	39.6	119	4	17.2	28.5	13.0
Monsanto	MH4436	NS	--	--	--	42.0	112	17	15.4	32.8	12.5
Monsanto	MH4437 CL	NS,CL	--	--	--	41.0	115	2	15.1	29.9	11.0
Monsanto	MH4438 CL	NS,CL	--	--	--	41.1	119	4	15.3	31.3	6.3
Monsanto	MH6635	HO	--	--	--	43.5	119	4	15.4	29.9	14.6
Monsanto	MH5434	HO	--	--	--	44.1	110	4	16.1	30.9	14.3
Monsanto	MH5436	NS/DM	--	--	--	42.7	103	22	14.9	31.3	13.5
Monsanto	MH5437	HO	--	--	--	39.7	108	9	15.8	30.7	12.1
Monsanto	MH5438	HO	--	--	--	42.8	112	0	15.4	29.4	10.6
Monsanto	MH6636	NS	--	--	--	42.7	114	3	14.9	30.3	15.7
Mycogen Seeds	8D310	NS	--	2572	--	39.4	132	0	15.4	28.8	11.0
Mycogen Seeds	8H350DM	HO	--	1860	--	42.6	129	3	16.2	30.7	9.9
Mycogen Seeds	8H419CL	HO,CL	--	2174	--	40.6	120	2	14.9	29.6	12.4
Mycogen Seeds	8N352	NS	--	2250	--	41.9	107	7	14.4	31.2	11.3
Mycogen Seeds	8N386CL	NS,CL	--	2303	--	40.3	134	6	15.5	30.0	10.6
Mycogen Seeds	8N453DM	NS	--	1778	--	42.6	115	5	17.0	30.8	10.7

Table 6 (cont.). Reliance, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006^	2005	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Mycogen Seeds	8N510	NS	--	2453	--	40.4	100	1	14.3	30.9	15.4
Mycogen Seeds	8N520DM	NS	--	--	--	41.1	115	1	16.3	29.0	13.3
Mycogen Seeds	8N462DM	NS	--	--	--	41.6	120	5	15.1	32.2	9.6
Pannar Genetics	PEX 2986	NS	--	--	--	39.8	119	3	17.4	31.9	8.7
Pannar Seed Inc.	PAN 7924NS	NS	--	--	--	42.1	98	2	19.0	29.2	9.8
Pannar Seed Inc.	PAN 9501	Trad.	--	1916	--	40.2	115	5	15.3	30.6	13.3
Pannar Seed Inc.	PAN EX2853	NS	--	--	--	41.3	114	2	14.0	30.3	11.6
Pioneer Hi-Bred	6423	HO	--	--	--	40.9	129	3	15.9	29.6	10.7
Pioneer Hi-Bred	6444	HO	--	--	--	42.0	120	3	16.1	31.5	12.4
Pioneer Hi-Bred	6447	HO	--	--	--	40.5	111	0	19.0	28.7	12.3
Pioneer Hi-Bred	63M80	NS	--	1928	--	41.9	116	0	16.3	30.6	13.3
Pioneer Hi-Bred	63M91	NS	--	1481	--	41.4	129	3	15.6	31.9	13.1
Pioneer Hi-Bred	64H41	HO	--	1712	--	41.5	108	3	15.5	31.8	12.0
Producers Hybrids	XSF001NSCL	NS,CL	--	--	--	38.6	110	6	16.6	29.2	12.3
Producers Hybrids	SF7203	Trad.	--	2487	--	41.6	130	1	17.7	29.5	13.8
Producers Hybrids	SF7303	NS	--	2008	--	41.9	106	3	16.7	29.0	12.7
Proseed	9441	NS	--	1799	--	40.9	124	6	17.6	27.8	8.6
Proseed	CL-51	NS,CL	--	--	--	39.9	105	17	18.3	27.6	11.8
Zuelzer & Son Canada	ZSun1	HO	--	--	--	39.4	117	0	13.3	30.5	9.9
Proseed	E-85	HO	--	--	--	38.9	126	3	17.3	29.5	5.4
Seeds 2000	Barracuda	NS,CL	--	1553	--	41.6	113	3	18.0	32.3	11.6
Seeds 2000	Blazer	NS	--	1565	--	42.2	102	2	17.0	29.6	10.5
Seeds 2000	Sierra	HO	--	2455	--	41.7	112	1	19.4	29.8	11.5
Triumph Seed	645	NS	--	2390	--	41.8	114	1	16.6	29.3	11.4
Triumph Seed	845HO	HO	--	--	--	42.0	112	2	17.3	28.8	10.4
Triumph Seed	s672	NS	--	1836	--	42.6	74	1	17.3	30.2	11.5
Triumph Seed	s675	NS	--	--	--	41.9	81	2	21.4	28.6	14.4
Triumph Seed	s678	NS	--	2200	--	42.2	96	0	17.3	32.4	12.7
USDA	Hyb. 894 (check)	Trad.	--	1658	--	41.3	100	6	14.7	31.3	9.9
	Grand mean			1974		41.1	113	3	16.1	30.4	11.7
	LSD 5%			599		2.0	13	8	3.4	2.8	3.4
	C.V.			18.7		3.0	7.3	161.6	12.9	5.6	18.2

* NS = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield, DM = downy mildew resistant.
^ Yields from 2006 were too variable for publication, due to poor stands and drought.
Planted June 8, 2006. Harvested October 23, 2006.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Trent Schindler, Reliance, SD.

Table 7. Oilseed sunflower hybrid trial - Onida, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006^	2005	2-yr Avg.	Oil %	Days to Flwr	Plant Hght cm	Lodg %	Harv. Moist. %	Pop. 1000 pl/A	Hulling Quality Test
Advanta Pacific, LLC	AP533NS	NS	--	--	--	40.9	63	100	14	13.2	13.8	
Advanta Pacific, LLC	AP534NS/CL	NS,CL	--	--	--	39.2	66	98	10	13.8	14.5	
Advanta Pacific, LLC	F30250	NS	--	--	--	40.5	63	98	12	13.3	12.2	
Advanta Pacific, LLC	F41271	NS	--	--	--	37.8	62	82	9	12.8	10.8	
Advanta Pacific, LLC	F51320	NS	--	--	--	39.3	60	105	2	13.1	14.0	
Advanta Pacific, LLC	F51321	NS	--	--	--	39.2	61	90	9	13.7	14.6	
Croplan Genetics	356 NS	NS	--	--	--	39.7	63	85	4	13.0	16.8	
Croplan Genetics	378 DMR	HO	--	2154	--	41.0	63	86	6	13.7	12.8	Poor
Dahlgren	4421	NS	--	1835	--	39.7	59	93	14	12.0	10.0	
Dekalb	DKF 3875	Trad.	--	1917	--	41.2	65	78	0	12.8	14.6	Poor
Dekalb	DKF 38-80 CL	Trad,CL	--	1741	--	41.3	63	72	9	13.7	13.1	Poor
Dekalb	DKF35-10 NS	NS/DM	--	--	--	41.2	61	93	3	14.4	14.7	Poor
Dekalb	DKF37-31NS	NS	--	--	--	41.1	63	79	6	12.5	11.0	Poor
Dekalb	DKF38-30 NS	NS	--	1784	--	41.6	66	99	7	14.2	13.3	Poor
Dekalb	DKF38-45NS	NS	--	--	--	41.5	63	88	11	12.8	12.3	Poor
Dyna-Gro	94T90	Trad.	--	1970	--	41.3	64	95	5	13.4	12.1	
Dyna-Gro	FX06794	NS	--	--	--	40.7	65	83	7	14.1	13.1	
Dyna-Gro	FX06483	NS,CL	--	--	--	38.8	66	96	11	14.7	12.8	
Garst Seed	4420 NS	NS	--	--	--	38.5	66	94	7	13.6	15.7	
Garst Seed	4651 NS	NS	--	--	--	41.6	64	92	5	14.9	10.8	
Garst Seed	4665 HO	HO	--	--	--	40.0	64	111	6	12.8	12.3	
Garst Seed	4668 NS/CL	NS,CL	--	--	--	37.5	65	87	14	14.0	12.6	
Garst Seed	4704 NS	NS	--	--	--	38.6	60	86	11	12.6	9.9	
IntegraSeed Ltd	INT 432	Trad.	--	--	--	41.5	63	84	1	12.5	14.5	
IntegraSeed Ltd	INT 536NSDM	NS,DM	--	--	--	37.0	60	89	5	14.0	11.3	
IntegraSeed Ltd	INT 550NS	NS	--	--	--	38.7	61	91	11	13.2	11.4	
IntegraSeed Ltd	INT 735NSCL	NS,CL	--	--	--	40.2	64	93	3	12.9	14.7	
Interstate Seed	HyOleic 120	HO	--	1591	--	39.5	64	92	6	14.3	11.4	
Interstate Seed	Hysun 450	NS	--	2111	--	39.9	65	84	1	14.7	13.2	
Interstate Seed	Hysun 454	NS	--	--	--	40.0	63	89	3	13.8	14.9	
Interstate Seed	Hysun 521	NS	--	--	--	40.6	56	77	15	11.8	12.9	
Interstate Seed	IS 4668 NS/CL	NS,CL	--	--	--	39.6	65	90	14	14.8	13.6	Poor
Interstate Seed	IS 4704 NS	NS	--	1478	--	40.6	60	87	16	12.8	9.4	Poor
Interstate Seed	IS 5770 NS	NS	--	--	--	37.6	64	99	17	13.6	11.6	
Interstate Seed	IS 5880 NS/CL	NS,CL	--	--	--	39.1	64	81	6	14.5	10.1	
King Seed Inc.	SunKing 4404NS/CL	NS,CL	--	--	--	39.9	66	90	8	14.3	13.9	
King Seed Inc.	SunKing 4500NS	NS	--	--	--	41.0	64	91	4	13.5	16.2	
King Seed Inc.	SunKing 4505	Trad.	--	--	--	42.3	65	99	7	13.3	12.7	
Legend Seeds	LSX 138N	NS	--	--	--	36.8	64	92	2	13.7	15.6	
Legend Seeds	LSF 121N	NS	--	--	--	40.0	61	94	7	13.2	11.6	
Legend Seeds	LSF 142N	NS	--	--	--	40.4	66	87	12	15.0	13.3	
Legend Seeds	LSF 223NCL	NS,CL	--	--	--	39.5	67	99	3	14.3	13.8	
Monsanto	MH4436	NS	--	1722	--	40.3	64	93	8	12.8	15.4	Poor
Monsanto	MH4437 CL	NS,CL	--	--	--	39.2	61	94	5	12.6	14.7	Poor
Monsanto	MH4438 CL	NS,CL	--	--	--	39.7	63	97	3	13.4	13.1	Poor
Monsanto	MH6635	HO	--	--	--	41.3	63	102	0	13.9	14.0	Excel.
Monsanto	MH5434	HO	--	1841	--	41.2	65	94	6	13.2	15.3	Excel.
Monsanto	MH5436	NS/DM	--	--	--	40.2	59	79	7	12.8	12.5	Good
Monsanto	MH5437	HO	--	--	--	41.5	65	93	4	13.5	14.8	Poor
Monsanto	MH5438	HO	--	--	--	41.0	65	89	5	13.1	12.5	Poor
Monsanto	MH6636	NS	--	--	--	41.6	63	97	4	12.5	12.5	Poor
Mycogen Seeds	8D310	NS	--	2172	--	38.9	61	101	6	12.3	12.1	Poor

Table 7 (cont.). Onida, SD 2006.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2006^	2005	2-yr Avg.	Oil %	Days to Flwr	Plant Hght cm	Lodg %	Harv. Moist. %	Pop. 1000 pl/A	Hulling Quality Test
Mycogen Seeds	8H350DM	HO	--	1876	--	42.0	59	99	8	12.9	11.2	
Mycogen Seeds	8H419CL	HO,CL	--	2006	--	40.6	65	94	5	13.8	13.1	
Mycogen Seeds	8N352	NS	--	2107	--	41.0	63	78	0	14.8	16.5	
Mycogen Seeds	8N386CL	NS,CL	--	1743	--	40.0	64	105	15	13.7	11.1	
Mycogen Seeds	8N453DM	NS	--	2013	--	40.2	61	78	0	14.8	11.9	
Mycogen Seeds	8N510	NS	--	1817	--	39.1	66	87	6	13.7	14.6	Poor
Mycogen Seeds	8N520DM	NS	--	--	--	40.8	65	86	4	14.1	14.8	Poor
Mycogen Seeds	8N462DM	NS	--	--	--	41.2	62	89	4	14.8	11.7	
Pannar Genetics	PEX 2961	NS	--	--	--	39.8	64	108	8	13.2	9.3	
Pannar Genetics	PEX 2968	Trad.	--	--	--	39.3	66	103	8	14.5	13.4	
Pannar Genetics	PEX 2986	NS	--	--	--	41.1	62	109	6	13.8	9.2	
Pannar Seed Inc.	PAN 7813NS	NS	--	--	--	40.5	63	89	12	15.4	12.2	
Pannar Seed Inc.	PAN 7924NS	NS	--	--	--	40.9	65	84	10	14.3	13.9	
Pannar Seed Inc.	PAN 9404	Trad.	--	1778	--	41.7	64	92	3	13.2	13.4	
Pannar Seed Inc.	PAN 9501	Trad.	--	1858	--	39.9	67	98	4	12.7	15.5	
Pannar Seed Inc.	PAN EX2422	NS	--	--	--	38.8	65	105	5	14.3	13.3	
Pannar Seed Inc.	PAN EX2453	NS	--	--	--	39.9	65	98	7	14.3	13.3	
Pannar Seed Inc.	PAN EX2853	NS	--	--	--	38.1	65	91	3	13.6	12.0	
Pioneer Hi-Bred	6423	HO	--	--	--	40.9	61	79	4	12.5	12.9	Poor
Pioneer Hi-Bred	6444	HO	--	--	--	40.1	67	97	4	14.2	15.9	Poor
Pioneer Hi-Bred	6447	HO	--	--	--	40.1	65	86	6	14.0	12.1	Good
Pioneer Hi-Bred	63M80	NS	--	1826	--	41.0	59	85	3	13.4	13.4	Poor
Pioneer Hi-Bred	63M91	NS	--	1866	--	40.8	60	109	2	13.4	13.3	Good
Pioneer Hi-Bred	64H41	HO	--	1612	--	39.8	62	106	10	13.2	12.8	Poor
Producers Hybrids	XSF001NSCL	NS,CL	--	--	--	38.9	65	88	6	14.2	14.4	
Producers Hybrids	SF7203	Trad.	--	1832	--	42.4	65	111	6	13.8	11.1	
Producers Hybrids	SF7303	NS	--	1853	--	41.6	66	82	6	12.9	9.3	
Proseed	9441	NS	--	1887	--	40.9	67	94	5	12.1	11.6	
Proseed	CL-51	NS,CL	--	--	--	40.6	64	87	5	12.1	13.4	
Zuelzer&Son Canada	ZSun1	HO	--	--	--	39.9	61	88	3	13.9	10.0	Excel.
Proseed	E-85	HO	--	--	--	39.9	63	94	6	13.4	14.1	Poor
Seeds 2000	Barracuda	NS,CL	--	1823	--	40.6	66	98	0	14.9	13.8	
Seeds 2000	Blazer	NS	--	1996	--	41.4	63	83	3	15.9	12.8	
Seeds 2000	Sierra	HO	--	2112	--	39.5	68	92	3	14.4	13.6	
Triumph Seed	645	NS	--	1690	--	39.6	65	93	5	15.3	13.3	Poor
Triumph Seed	658	NS	--	--	--	39.1	65	96	7	13.5	15.2	
Triumph Seed	660CL	NS,CL	--	1850	--	39.7	68	99	3	14.2	13.4	Excel.
Triumph Seed	845HO	HO	--	--	--	42.3	65	94	4	14.1	13.2	Excel.
Triumph Seed	s672	NS	--	1796	--	40.4	65	59	4	14.1	14.8	
Triumph Seed	s675	NS	--	2141	--	40.5	69	77	4	14.3	15.1	
Triumph Seed	s678	NS	--	1661	--	41.2	68	95	6	16.3	12.6	
USDA	Hyb. 894 (check)	Trad.	--	1709	--	41.6	65	104	15	14.4	8.8	
	Grand mean			1778		40.2	64	92	6	13.7	13.0	
	LSD 5%			380		2.1	1	17	ns	1.5	2.9	
	C.V.			13.3		3.7	1.5	13.6	109	8.0	16.1	

* NS = NuSun, HO = High Oleic, Trad. = Traditional linoleic, CL = Clearfield, DM = downy mildew resistant.
Planted June 7, 2006. Harvested October 25, 2006.
^ Yields from 2006 were too variable for publication, due to drought and wind damage.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Van and Chris Huse, Onida, SD.
Hulling quality test: Excel.= >65% of seed passes over a 14/64 screen, Good = >75% of seed passes over a 13/64 screen.

Table 8. Oilseed sunflower hybrid trial averaged over Eureka and Miller, SD - 2006.

BRAND	HYBRID	TYPE	2006 Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific, LLC	AP533NS	NS	898	42.2	106	4	11.6	29.1	12.9
Advanta Pacific, LLC	AP534NS/CL	NS,CL	1373	42.5	112	8	13.5	29.3	13.4
Advanta Pacific, LLC	F30250	NS	1143	42.2	107	6	12.7	29.1	12.3
Advanta Pacific, LLC	F41271	NS	1137	42.2	104	4	12.2	28.8	11.6
Advanta Pacific, LLC	F51320	NS	1000	42.6	103	6	12.1	29.4	12.6
Advanta Pacific, LLC	F51321	NS	1306	41.9	99	1	13.2	28.2	13.8
Dyna-Gro	94T90	Trad.	1309	43.4	115	4	12.3	29.5	14.7
Dyna-Gro	FX06794	NS	1364	42.6	98	4	13.4	29.0	13.6
Dyna-Gro	FX06483	NS,CL	1500	42.8	108	3	12.7	28.7	15.3
Garst Seed	4420 NS	NS	1226	42.2	108	5	12.8	29.0	13.0
Garst Seed	4651 NS	NS	1038	43.2	115	6	13.1	28.6	10.5
Garst Seed	4665 HO	HO	1201	43.1	119	11	12.3	29.5	10.0
Garst Seed	4668 NS/CL	NS,CL	1547	41.9	116	8	13.2	29.0	15.4
Garst Seed	4704 NS	NS	916	41.8	100	3	12.5	28.6	14.5
IntegraSeed Ltd	INT 536NSDM	NSDM	1199	42.7	104	6	12.8	29.7	13.8
IntegraSeed Ltd	INT 550NS	NS	1113	42.7	101	7	13.4	29.9	13.5
IntegraSeed Ltd	INT 737NSCL	NS,CL	1521	41.4	120	8	13.4	28.8	15.7
Interstate Seed	HyOleic 120	HO	1166	43.1	116	5	11.8	29.6	12.6
Interstate Seed	Hysun 521	NS	1062	42.3	99	10	12.6	29.9	12.1
Interstate Seed	IS 4668 NS/CL	NS,CL	1553	42.3	112	6	13.6	29.5	14.5
Interstate Seed	IS 4704 NS	NS	1076	43.3	105	2	12.7	28.3	12.8
Interstate Seed	IS 5770 NS	NS	1402	42.9	111	2	12.4	30.4	12.0
Interstate Seed	IS 5880 NS/CL	NS,CL	937	42.5	109	5	13.1	29.0	11.2
King Seed Inc.	SunKing 4404NS/CL	NS,CL	1541	41.0	108	5	13.0	29.4	15.5
King Seed Inc.	SunKing 4500NS	NS	1472	41.9	109	5	12.8	29.6	12.1
King Seed Inc.	SunKing 4505	Trad.	1114	44.6	117	2	12.5	28.3	14.3
Legend Seeds	LSX 138N	NS	1163	43.1	113	6	12.5	28.8	12.4
Legend Seeds	LSF 121N	NS	1094	43.1	111	5	12.2	29.1	13.3
Legend Seeds	LSF 142N	NS	1540	43.3	100	3	13.1	28.9	14.0
Legend Seeds	LSF 223NCL	NS,CL	1542	42.4	106	3	13.2	28.7	15.4
Mycogen Seeds	8D310	NS	1224	42.1	109	4	12.2	28.5	13.4
Mycogen Seeds	8H350DM	HO	1036	43.4	108	7	12.3	29.2	13.3
Mycogen Seeds	8H419CL	HO,CL	1421	43.2	111	0	12.8	28.9	14.7
Mycogen Seeds	8N352	NS	1508	43.9	99	2	12.7	30.1	13.8
Mycogen Seeds	8N386CL	NS,CL	1116	42.9	118	5	12.5	28.1	12.5
Mycogen Seeds	8N453DM	NS	1205	44.3	104	2	12.0	29.1	13.1
Mycogen Seeds	8N510	NS	1571	42.4	107	2	12.8	28.7	14.7
Mycogen Seeds	8N520DM	NS	1438	42.7	105	5	13.2	28.3	14.1
Mycogen Seeds	8N462DM	NS	1510	43.7	107	6	13.4	30.1	12.2
Pannar Genetics	PEX 2986	NS	1427	41.8	109	7	13.1	30.0	11.5
Pannar Seed Inc.	PAN 7813NS	NS	1416	41.6	106	7	13.7	28.8	12.6
Pannar Seed Inc.	PAN 7924NS	NS	1444	42.5	117	5	13.4	28.1	13.5
Pannar Seed Inc.	PAN EX2422	NS	1131	42.4	102	5	13.0	28.2	12.7
Pannar Seed Inc.	PAN EX2453	NS	1221	42.3	110	8	12.8	29.2	12.6
Pioneer Hi-Bred	6423	HO	1110	42.6	115	8	11.8	29.0	13.6
Pioneer Hi-Bred	6444	HO	1008	42.7	113	5	11.9	30.0	12.5
Pioneer Hi-Bred	6447	HO	1403	41.7	114	8	13.0	29.5	12.1
Pioneer Hi-Bred	63M80	NS	1190	42.8	103	8	12.1	29.1	12.9

Table 8 (cont.).

BRAND	HYBRID	TYPE	2006 Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Pioneer Hi-Bred	63M91	NS	1155	42.0	111	3	12.3	29.2	14.5
Pioneer Hi-Bred	64H41	HO	1126	42.6	113	4	12.8	29.5	14.0
Proseed	9441	NS	836	42.8	116	9	11.8	27.7	10.9
Proseed	CL-51	NS,CL	795	42.8	108	9	11.9	28.9	13.3
Zuelzer & Son Canada	ZSun1	HO	1105	42.5	108	9	11.7	28.2	11.8
Proseed	E-85	HO	1358	42.6	118	7	12.2	28.3	12.6
Seeds 2000	Barracuda	NS,CL	1301	42.2	107	4	14.0	29.4	13.9
Seeds 2000	Blazer	NS	1535	43.3	91	6	12.7	30.3	12.7
Seeds 2000	Sierra	HO	1342	42.1	99	4	13.4	28.8	14.7
Triumph Seed	645	NS	1559	43.2	109	4	13.5	29.1	14.4
Triumph Seed	845HO	HO	1599	42.5	103	7	13.1	28.8	14.4
Triumph Seed	s672	NS	1361	43.8	76	-0	13.0	29.4	16.8
Triumph Seed	s675	NS	1797	43.2	85	3	13.7	29.1	15.5
Triumph Seed	s678	NS	1707	43.1	97	3	13.9	29.2	14.1
USDA	Hyb. 894 (check)	Trad.	1148	44.3	97	6	12.1	27.9	10.3
	Grand mean		1279	42.7	107	5	12.7	29.0	13.3
	LSD 5%		391	1.3	12	ns	1.3	ns	2.5
	C.V.		20	2.8	8	99	5.9	3.8	13.4

Table 9. Confection hybrid sunflower trial - Miller, SD 2006.

Brand	Hybrid	Seed Yield (lbs/A) 2006	2005	2-yr	Plant Height cm	Harv. Moist. %	Lodging %	Test Wt. lb/bu	Pop. 1000 pl/A	% Seed Over Screen 22/64	20/64	18/64	Nutmeat %
CHS	RH112	1012	3409	2210	136	12.7	15	22.9	11.8	61.2	80.9	91.3	50.0
CHS	RH1122	1195	--	--	133	12.7	23	22.4	10.1	62.5	80.8	89.9	48.6
Dahlgren	D 9541	1437	--	--	142	12.9	19	23.1	13.0	51.2	76.4	89.5	51.4
Dahlgren	D 9531	1529	3053	2291	137	13.2	16	23.1	10.4	48.7	71.8	87.3	51.2
Mycogen Seeds	8C481	1436	3177	2306	139	12.9	14	23.1	12.3	55.2	79.8	91.8	51.2
Mycogen Seeds	8C482	1539	--	--	145	13.3	16	22.3	11.5	68.0	85.7	92.4	51.7
Red River Commod.	2214	950	3448	2199	129	13.3	14	22.9	8.3	51.5	75.1	86.8	51.5
Red River Commod.	2215	1398	3828	2613	128	12.9	21	23.1	9.2	56.2	79.8	91.4	50.4
Red River Commod.	2216	1430	3488	2459	128	13.0	13	23.2	12.1	54.9	77.9	89.7	51.8
Red River Commod.	8010	1330	--	--	119	13.2	35	23.4	5.3	56.9	76.2	87.4	50.0
Seeds 2000	X3967	1339	--	--	126	13.0	13	23.6	8.2	63.2	79.6	90.2	49.9
Seeds 2000	X3938	1505	--	--	125	12.7	7	23.5	12.7	59.3	76.5	89.1	50.3
Seeds 2000	X3638	1374	--	--	122	12.5	8	23.7	12.9	50.6	76.2	90.2	50.5
Seeds 2000	X3654	1674	--	--	128	13.0	18	24.5	9.3	36.7	65.4	84.6	54.2
Sunflower R & D	6132	909	--	--	151	13.5	60	23.9	4.1	51.8	73.9	88.3	51.4
Triumph Seed	777C	1549	2987	2268	126	12.8	15	23.4	11.1	59.1	78.4	89.3	52.1
Triumph Seed	767C	1494	3341	2418	135	13.8	15	22.5	11.0	68.6	82.7	91.3	50.4
USDA	924(check)	846	2864	1855	133	12.5	13	23.2	6.4	45.9	69.5	85.3	49.2
Grand mean		1330	3301	2316	132	13.0	19	23.2	10.0	55.6	77.0	89.2	50.9
LSD 5%		335	563		13	0.6	10	ns	2.7	14.7	9.1	4.6	ns
C.V.		17.7	12.1		7.1	3.1	38.3	3.9	19.1	18.5	8.3	3.7	4.0

Planted June 5, 2006. Harvested October 27, 2006.
Yields are reported at 10% moisture.
Cooperator: Roger Bertsch, St. Lawrence, SD.

Table 10. Confection hybrid sunflower trial - Onida, SD 2006.

Brand	Hybrid	Seed Yield (lbs/A) 2006*	2005	2-yr	Days to Flwr	Plant Hght cm	Harv. Moist. %	Lodg-ing %	Test Wt. lb/bu	Pop. 1000 pl/A	% Seed Over Screen 22/64	20/64	18/64	Nut-meat %
CHS	RH112	--	--	--	65	98	12.4	6	25.4	13.0	33.9	57.9	77.3	50.4
CHS	RH1122	--	--	--	63	100	12.5	5	25.5	9.7	22.7	47.9	73.5	51.4
Dahlgren	D 9541	--	--	--	65	105	12.5	5	25.3	10.5	37.3	63.7	82.7	50.4
Dahlgren	D 9531	--	1608	--	64	100	12.9	2	24.9	10.7	36.9	65.6	83.0	52.1
Mycogen Seeds	8C481	--	2125	--	63	111	12.8	14	26.1	8.1	36.5	56.2	74.8	51.1
Mycogen Seeds	8C482	--	--	--	65	111	14.5	8	25.8	8.5	36.7	59.3	77.1	52.0
Red River Commod.	2214	--	1667	--	65	99	12.8	5	25.7	7.2	37.2	62.1	80.1	49.6
Red River Commod.	2215	--	1798	--	65	93	12.9	2	25.6	10.6	34.7	60.5	80.1	53.2
Red River Commod.	2216	--	1573	--	65	92	12.6	4	26.7	10.2	29.7	52.7	77.2	53.0
Red River Commod.	8010	--	--	--	67	88	14.2	4	24.6	5.0	43.4	64.8	80.6	49.1
Seeds 2000	X3967	--	--	--	64	96	13.2	4	25.6	10.8	30.1	53.6	74.5	48.6
Seeds 2000	X3938	--	--	--	64	109	12.5	2	25.4	8.5	39.9	62.6	79.1	47.4
Seeds 2000	X3638	--	--	--	63	96	12.4	5	25.1	9.5	34.3	60.0	79.5	44.8
Seeds 2000	X3654	--	--	--	67	96	12.7	3	26.2	9.7	19.8	45.0	73.0	55.4
Sunflower R & D	6009	--	--	--	66	106	12.4	12	25.4	7.9	33.6	60.2	80.1	53.0
USDA	924(check)	--	1559	--	65	114	12.9	5	26.8	7.2	35.1	56.1	73.4	48.1
Grand mean			1779		65	101	12.9	5	25.6	9.2	33.9	58.0	77.9	50.6
LSD 5%			339		2	14	0.9	ns	ns	ns	ns	ns	ns	4.5
C.V.			13.4		1.8	9.9	5.1	120.1	3.8	27.7	29.3	15.1	7.0	6.2

Planted June 7, 2006. Harvested October 25, 2006.
* Yields from 2006 were too variable for publication, due to poor stands, drought, and wind damage.
Yields are reported at 10% moisture.
Cooperator: Van and Chris Huse, Onida, SD.

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2006
South Dakota Flax Variety Evaluations

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The success of flax production is affected by choice of variety. Carefully examine seed yield, oil content, disease resistance, and maturity. In some cases oil content or other traits may offset a yield advantage.

Yield

Evaluate as much yield data as possible when selecting a variety, looking at relative performance over many locations and years. For example, in this publication, variety comparisons from 3 years and four locations are better than those from a single year or location. Consistently good performance over many environments is called "yield stability."

Good yield stability means that a variety may or may not be the best yielder at all locations, but it ranks high in yield potential at many locations. A variety that ranks in the upper 20% over all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.05) value at the bottom of each data column. This is a statistical way to indicate if a trait differs when comparing two varieties. If two varieties differ by more than the indicated LSD value for a given trait, they will likely differ when grown again under highly similar conditions.

For example, if the trial at Watertown could be repeated exactly as it was in 2006 (Table 1), the yield ranking of AC Watson (22.0 bu/A) and Carter (25.1 bu/A) might change places since their yield difference (3.1 bu/A) is less than the indicated LSD value of 4.1 bu/A.

However, we would expect Carter (25.1 bu/A) to yield more than AC Carnduff (18.2 bu/A) if the test was repeated since their yield difference (6.9 bu/A) is greater than the LSD value of 4.1 bu/A.

In Table 1, the minimum yield of varieties that were in the top-yielding group at a particular location is printed at the bottom of each data column (if significant differences in yield were measured). Any variety meeting or exceeding this minimum yield value differed by less than the LSD.05 value from the highest-yielding variety in the test and is therefore considered to be in the top-yielding group. For example, in the 2006 trial at Watertown there were 13 varieties in the top-yield group. Numerically, Carter had the highest yield (25.1 bu/A). AC Watson, CDC Arras, CDC Bethume, CDC Mons, Omega, Prairie Blue, Rahab 94, Selby, York, FP2112, FP2137, and N325 were also in the top-yielding group because their yields were within one LSD value of Carter.

If the LSD.05 value is indicated as 'ns,' there were no statistically significant differences in yield among the varieties. In other words, the variety yields were all close enough to each other to be essentially the same, considering the amount of variation inherent in the test.

When evaluating yield, look at as many trials as possible. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for making variety choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15–20% may be considered reliable.

Oil content

Among varieties with similar yield potential, select the one with the highest oil content.

Maturity

Later-maturing varieties generally will produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding, only an early variety will mature properly and exhibit its best yield potential and oil content.

Seed availability and quality

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high-quality seed with good germination. Certified seed is recommended to assure varietal purity, seed viability, and freedom from pathogens and weed seed.

2006 trial procedures

A yield trial of flax varieties and experimental lines from South Dakota, North Dakota, and Canada was grown at the Northeast Research Station (Watertown, S.D.) and Brookings, S.D., in 2006. The purpose of the trial was to provide performance data on released flax varieties to producers and also to compare performance of experimental lines to established checks in order to identify possible new varieties.

In 2006, 10 experimental lines from the NDSU or Canadian flax breeding programs were tested against 20 released varieties. The Watertown trial was planted on April 27. Brookings Early Seeded was planted April 26 and Brookings Late was planted May 23. An additional trial was planted at Brookings on May 23 in a field infested with the flax wilt fungus, *Fusarium oxysporum* f. *lini* to test the resistance of the flax varieties to wilt.

Experimental design at each location was a randomized complete block with three replications. Plots consisted of seven rows 14 ft long with rows spaced 7 inches apart. Plots at all locations were harvested by cutting the middle three rows of each plot with a bundle cutter, then drying and threshing the bundles.

The 2006 growing season began warmer and slightly drier than normal in most of eastern South Dakota. Topsoil moisture was adequate at planting and stands were good at all locations.

The remainder of the growing season was warmer and much drier than normal, resulting in 33% lower yields than in 2005, averaged over all locations.

Table 1 shows the 2006 flax yield data for several sites in South Dakota. Three-year and statewide yield averages are also provided. Table 2 summarizes the characteristics of the varieties included in the performance trials.

Yields were highest at Watertown, averaging 20.8 bu/A across the thirty varieties tested. Yields at Brookings averaged 16.8 bu/A for the early-planted trial and 9.9 bu/A for the late-planted trial.

EXEX8055, revised April 2007. Access at http://agbiopubs.sdstate.edu/articles/ExEx8055.pdf.

Table 1. One and three-year average flax yields (bu/A) at several locations in South Dakota.

Variety	Origin -Year	Brookings Early-seeded 2006	Brookings Early-seeded 3-yr	Brookings Late-seeded 2006	Brookings Late-seeded 3-yr	Watertown 2006	Watertown 3-yr	Webster 2005	Webster 2-yr	Statewide 2006	Statewide 3-yr	State-wide Rank	Yield* Sta-bility
			-3-**		-3-		-3-		-2-	-3-	-11-		
AC Carnduff	CAN-99	16.0	25.2	10.5	18.4	18.2	27.7	23.0	34.6	15.0	25.7	5	3/6
AC Hanley	CAN-02	15.3	22.4	7.5	16.8	16.5	26.1	21.0	33.3	13.3	23.9	18	1/6
AC Watson	CAN-97	18.0	22.9	10.4	17.6	22.0	26.6	22.7	36.7	16.9	25.0	12	2/6
Bison (check)	ND-27	20.0	24.1	9.4	17.1	19.2	24.9	21.3	28.5	16.3	23.2	23	0/6
Carter	ND-05	17.5	25.4	11.2	18.6	25.1	30.2	22.5	32.9	18.1	26.2	2	4/6
Cathay	ND-97	17.3	23.0	9.8	18.4	17.3	23.8	21.5	30.7	14.9	23.3	21	0/6
CDC Arras	CAN-00	14.5	21.8	10.5	19.0	25.0	31.9	25.2	36.8	16.8	26.5	1	4/6
CDC Bethume	CAN-00	15.8	22.9	10.2	18.3	22.9	27.5	26.3	37.0	16.4	25.5	7	4/6
CDC Mons	CAN-03	17.4	24.9	9.0	16.9	21.2	27.0	21.6	33.7	16.0	24.9	14	3/6
CDC Normandy	CAN-96	19.0	24.8	11.6	20.1	20.9	25.2	22.4	32.1	17.3	25.0	13	1/6
Linott (check)	CAN-66	18.0	23.7	10.6	18.3	20.2	26.5	22.5	33.7	16.4	24.8	15	2/6
McGregor (check)	CAN-82	18.1	21.6	8.3	15.5	18.7	27.1	21.7	34.8	15.1	23.8	19	1/6
Nekoma	ND-02	17.5	24.9	12.7	18.1	20.2	28.5	22.0	30.6	17.0	25.1	11	2/6
Omega	ND-90	17.8	22.9	8.7	14.4	24.7	24.7	22.1	32.9	17.2	22.9	24	1/6
Pembina	ND-97	13.7	23.0	9.4	18.4	20.6	27.6	22.2	32.4	14.7	24.7	17	1/6
Prairie Blue	CAN-03	16.4	24.8	8.8	19.6	22.3	27.4	22.5	30.7	16.0	25.2	9	2/6
Rahab 94 (check)	SD-94	13.9	22.2	10.2	17.9	22.8	30.7	21.2	33.5	15.7	25.4	8	3/6
Selby	SD-00	17.9	24.1	9.8	18.4	23.4	27.9	27.3	34.7	17.1	25.5	6	1/6
Webster	SD-98	15.5	23.9	11.7	20.8	20.3	28.1	24.8	34.0	16.0	26.0	3	1/6
York	ND-02	17.4	24.1	10.1	17.2	22.3	29.8	24.0	34.9	16.8	25.7	4	3/6
Experimentals													
FP2112	CAN-exp.	15.1	24.2	8.9	18.7	21.7	27.7	22.5	32.5	15.3	25.2	10	2/6
FP2114	CAN-exp.	16.1	20.8	8.8	16.2	18.2	26.5	20.3	33.3	14.5	23.4	20	1/6
FP2118	CAN-exp.	17.3	22.4	7.0	15.4	18.7	25.3	19.5	33.5	14.5	23.3	22	1/6
FP2119	CAN-exp.	19.5	26.0	8.8	14.8	18.6	26.8	25.1	35.0	15.8	24.8	16	2/6
FP2137	CAN-exp.	16.3	--	11.0	--	21.2	--	--	--	16.3	--	--	3/3
N2010B	ND-exp.	14.2	23.4	11.8	17.1	20.5	27.2	22.7	--	15.6	--	--	3/5
N325	ND-exp.	16.0	23.4	9.4	20.2	22.1	28.3	22.5	--	16.0	--	--	2/5
N414	ND-exp.	18.5	--	10.5	--	20.3	--	--	--	16.6	--	--	1/2
TS 12	ND-exp.	16.1	--	10.2	--	20.8	--	--	--	15.8	--	--	0/2
TS 19	ND-exp.	17.3	--	9.2	--	19.4	--	--	--	15.4	--	--	0/2
Grand Mean		16.8	23.6	9.9	17.8	20.8	27.4	22.5	33.4	16.0	24.8		
Check Mean		17.5	22.9	9.6	17.2	20.2	27.3	21.7	32.6	15.9	24.3		
LSD.05		ns^	ns	2.2	3.5	4.1	ns	ns	ns	ns	2.2		
Minimum yield of top group		--	--	10.5	17.3	21.0	--	--	--	--	24.3		
C.V.		13.0	11.6	13.3	14.1	12.1	11.6	11.3	10.0	13.5	11.8		

* Yield stability = number of times in top yield group/total number of tests having significant differences.
** Indicates the number of environments that were averaged to produce the numbers in the column.
^ ns = differences among the varieties were not statistically significant.

Table 2. Characteristics of flax varieties.

						Statewide Averages					Disease**	
	Origin	Days to	Seed	Color			Height	Yield (bu/A)		Lodgng	Resistance	
Variety	-Year	Flower	Size	Flower	Seed	Oil %	(in.)	2006	3-yr	(1-9)*	Wilt	Rust
		-2-***				-11-	-11-			-2-		
AC Carnduff	CAN-99	53	Small	Blue	Brown	40.3	22	15.0	25.7	1.3	MR	R
AC Hanley	CAN-02	51	Small	Blue	Brown	38.8	20	13.3	23.9	2.2	MR	R
AC Watson	CAN-97	50	Med-Lg	Blue	Brown	40.6	21	16.9	25.0	1.0	MS	R
Bison (check)	ND-27	49	Medium	Blue	Brown	38.9	22	16.3	23.2	1.2	MR	S
Carter	ND-05	51	Small	Blue	Yellow	40.0	21	18.1	26.2	1.5	MS	R
Cathay	ND-97	52	Medium	Blue	Brown	40.7	22	14.9	23.3	1.0	R	R
CDC Arras	CAN-00	54	Medium	Blue	Brown	40.5	22	16.8	26.5	1.0	R	R
CDC Bethume	CAN-00	52	Medium	Blue	Brown	40.3	21	16.4	25.5	1.8	MR	R
CDC Mons	CAN-03	53	Small	Blue	Brown	40.2	21	16.0	24.9	1.0	MR	R
CDC Normandy	CAN-96	51	Med-Sm	Blue	Brown	40.0	21	17.3	25.0	1.2	MR	R
Linott (check)	CAN-66	51	Med-Sm	Blue	Brown	40.3	22	16.4	24.8	1.7	MS	R
McGregor (check)	CAN-82	54	Medium	Blue	Brown	39.2	22	15.1	23.8	1.0	MR	R
Nekoma	ND-02	51	Med-Sm	Blue	Brown	40.7	21	17.0	25.1	1.0	S	R
Omega	ND-90	51	Medium	Blue	Yellow	40.6	21	17.2	22.9	1.5	MS	R
Pembina	ND-97	51	Med-Sm	Blue	Brown	40.3	22	14.7	24.7	1.0	R	R
Prairie Blue	CAN-03	51	Small	Blue	Brown	41.3	21	16.0	25.2	1.0	MR	R
Rahab 94 (check)	SD-94	51	Medium	Blue	Brown	40.8	20	15.7	25.4	1.0	MR	R
Selby	SD-00	52	Medium	Blue	Brown	40.6	22	17.1	25.5	1.3	MR	R
Webster	SD-98	54	Med-Sm	Blue	Brown	40.9	22	16.0	26.0	1.0	MR	R
York	ND-02	53	Medium	Blue	Brown	39.3	21	16.8	25.7	1.0	MR	R
FP2112	CAN-exp.	--	Medium	Blue	Brown	41.2	21	15.3	25.2	2.0	S	R
FP2114	CAN-exp.	--	Large	Blue	Brown	40.3	20	14.5	23.4	2.2	MR	R
FP2118	CAN-exp.	--	Med-Lg	Blue	Brown	41.0	22	14.5	23.3	3.0	R	R
FP2119	CAN-exp.	--	Medium	Blue	Brown	40.1	20	15.8	24.8	1.3	S	R
FP2137	CAN-exp.	--	--	Blue	Brown	--	--	16.3	--	--	--	--
N2010B	ND-exp.	--	Medium	Blue	Brown	--	--	15.6	--	--	MR	R
N325	ND-exp.	--	Medium	Blue	Brown	--	--	16.0	--	--	MS	R
N414	ND-exp.	--	--	Blue	Brown	--	--	16.6	--	--	--	--
TS 12	ND-exp.	--	--	Blue	Brown	--	--	15.8	--	--	--	--
TS 19	ND-exp.	--	--	Blue	Brown	--	--	15.4	--	--	--	--
Grand Mean		51				40.3	21	16.0	24.8	1.5		
Check Mean		51				39.8	21	15.9	24.3	1.2		
LSD.05		ns^				0.6	1	ns	2.2	1.5		
C.V.		2.0				2.0	5.2	13.5	11.8	84.5		

"* Lodging rated on a scale of 1 to 9, where 1=no lodging and 9=flat."
"** R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible."
*** Indicates the number of environments that were averaged to produce the numbers in the column.
^ ns = differences among the varieties were not statistically significant.

EC 909
Revised
Annually

SUNFLOWER

2007 South Dakota Hybrid Performance Trials

Oilseed

Confection

COOPERATIVE EXTENSION SERVICE • SOUTH DAKOTA STATE UNIVERSITY • U.S. DEPARTMENT OF AGRICULTURE

List of Tables

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SUNFLOWER

2007 South Dakota Hybrid Performance Trials
Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home, and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability".

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Eureka oilseed test (Table 5) could be repeated in 2008 exactly as it was in 2007, the yield ranking of a hybrid that yielded 2942 lbs/A and one that yielded 2577 lbs/A might change places, since their yield difference (365 lbs/A) is less than the indicated yield LSD value of 416 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Eureka in 2007. In contrast, a hybrid that yielded 2421 lbs/A at Eureka in 2007 would likely be lower yielding than one that yielded 2942 lbs/A if the two hybrids were grown again under similar conditions, because the difference between them in 2007 (2942 – 2421 = 521 lbs/A) exceeded the LSD value of 416 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to the aforementioned and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2007 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Eureka, Presho, Miller, and Bison). An additional site at Onida was lost shortly after emergence due to deer and cutworm damage. Entries in the oilseed sunflower trials included traditional oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. Non-oilseed (confection) sunflower trials were conducted at Miller. Trial sites are indicated on the map in Figure 1. Lists of hybrids planted at each site appear in Tables 2 and 3.

Climate

The 2007 growing season began with above-normal temperatures and precipitation in May and early June, which delayed sunflower planting in the major sunflower growing regions of South Dakota. A summary of climate conditions near the sunflower test sites is presented in Table 1. Temperatures were warmer than normal at all locations throughout the growing season, except for August, which was cooler. All locations had below normal precipitation in July but above normal precipitation in August. Eureka and Miller were also wetter than normal in June. Storms in August at Miller were accompanied by high winds that caused considerable lodging and leaning of plants in the sunflower plots. October was dry everywhere except Kennebec (Presho). The first killing frost did not occur until the last week of October at all sites.

Experimental Methods

Plots at all locations consisted of four rows, 30 feet long, spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62–66).

Seed of all of the hybrids entered in the trials was pre-treated with Cruiser insecticide, and most were also treated with fungicide. Seed treatments used on individual hybrids are listed in Tables 2 and 3. All trials were seeded no-till. The previous crop at Eureka and Miller was corn, at Presho it was sorghum, and at Bison it was wheat. Spartan herbicide was applied for weed control at all locations. Plots were overseeded and thinned to a plant population of 17,400 plants/acre. Stands were good everywhere except Bison. The fourth replication at Bison was not harvested due to antelope damage, and stands were variable in the other three reps, especially the first. The fourth and first reps were therefore excluded from the statistical analyses and means. The first replication at Miller was also excluded due to excessive lodging and a wet spot.

Flowering was recorded at Miller as the number of days from planting to 50% ray petals extended. Days from planting to physiological maturity (rated visually) was also recorded at Miller. Plant height and lodging notes were taken at all locations

immediately before harvest. Lodging was negligible at Eureka and Presho and very low at Bison. Miller had many lodged and leaning plants due to wind damage. There were significant differences in lodging among hybrids, ranging from 0% to 54% lodged plants. Percent incidence of sclerotinia head rot was recorded at Eureka.

Plots at Miller, Eureka, and Presho were harvested with a Gleaner Model K combine fitted with a two-row all row crop header, and seed yields were adjusted to a 10% moisture basis. Plots at Bison were harvested with a Massey-Ferguson plot combine fitted with sunflower pans. Yields at Bison were not adjusted for moisture content because of a malfunctioning moisture blade on the combine. Oil content was determined by NMR analysis. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Miller on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens.

A one-pint sub-sample of seed from each plot of the confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 4–9. Yields of oilseed hybrids were highest at Eureka, averaging 2065 lbs/acre over all hybrids tested, with an average oil content of 46.7%. The lowest yield and oil was measured at Bison, which averaged 1385 lbs/acre and 40.9% oil. Confection seed yields averaged 1460 lbs/acre at Miller. In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

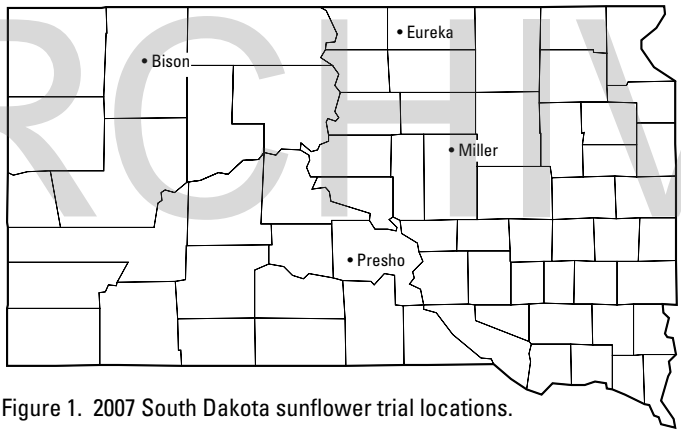

Figure 1. 2007 South Dakota sunflower trial locations.

Table 1. Climate summary for nearest weather stations to 2007 South Dakota sunflower test sites and departures from normal.

LOCATION-MONTH	2007 TEMPERATURE			TOTAL PRECIP IN.	DEPARTURE FROM NORMAL^			PRECIP IN.
	AVG MAX.	AVG MIN.	MEAN		MAX TEMP	MIN TEMP	AVG TEMP	
	----------°F----------				----------°F----------			
Bison*								
May	72	45	58	6.73	3	1	1	4.01
June	81	55	68	2.24	2	2	2	-0.58
July	94	63	79	0.94	8	5	7	-1.33
August	86	59	73	2.03	0	2	1	0.56
September	79	48	64	0.17	5	1	3	-1.03
October	63	37	50	0.44	2	2	2	-1.02
Eureka*								
May	74	47	60	5.77	4	3	3	3.14
June	79	57	68	9.16	1	4	2	5.99
July	87	62	75	1.11	2	4	4	-1.67
August	81	57	69	3.14	-3	1	-1	0.84
September	77	47	62	1.34	3	2	2	-0.09
October	61	37	49	0.76	2	3	3	-0.90
Miller*								
May	72	48	60	5.51	4	3	3	2.37
June	79	56	68	3.29	1	1	1	0.39
July	89	62	75	0.21	4	1	2	-2.39
August	81	59	70	8.55	-3	1	-1	6.54
September	75	49	62	2.44	1	2	2	0.64
October	63	38	50	0.66	2	3	3	-1.11
Kenebec*								
May	78	51	65	4.72	4	5	5	1.70
June	84	58	71	2.50	0	2	1	-0.48
July	94	65	80	0.12	3	4	4	-2.66
August	87	64	75	3.80	-3	4	0	1.78
September	83	52	68	0.80	3	3	3	-0.63
October	68	38	53	3.92	3	2	2	2.44

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2007 observations to 30-yr averages (1971–2000) for each site.

Table 2. Hybrids tested in the 2007 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Bison	Eureka	Miller	Presho
Advanta Pacific, LLC	AP534 NS/CL	NS	CL	CMAX		X		
Advanta Pacific, LLC	AP561 NS	NS		CMAX		X		
Advanta Pacific, LLC	F41269 DM3	NS		CMAX				
Advanta Pacific, LLC	F51132NS/CL/DM	NS	CL	CMAX		X		
Advanta Pacific, LLC	F51311 NS/DM	NS		CMAX		X		
Dahlgren & Co.	4421ND	NS		CDM			X	
Dahlgren & Co.	EX4370	Trad.		CDM			X	
Dahlgren & Co.	EX4377NS	NS		CDM			X	
Dahlgren & Co.	EX4455NS	NS		CDM			X	
Dekalb	DKF29-30	NS/DM		CMAX	X	X	X	X
Dekalb	DKF34-33	NS/DM		CMAX	X	X	X	X
Dekalb	DKF34-80CL	NS/DM	CL	CMAX	X	X	X	X
Dekalb	DKF37-31	NS		CMAX	X	X	X	X
Dekalb	DKF38-45	NS		CMAX	X	X	X	X
Dekalb	DKF38-75	Trad.		CMAX	X	X	X	X
Garst Seed	XF06NS16	NS		CR	X	X	X	X
Garst Seed	XF07NC82	NS	CL	CR	X	X	X	X
Garst Seed	XF07NS75	NS		CR	X	X	X	X
Garst Seed	XF07NC68			CR	X	X	X	X
Interstate Seed	IS4668 NS/CL	NS/CL	CL	CMAX	X	X	X	X
Interstate Seed	IS5770 NS	NS		CMAX	X	X	X	X
Interstate Seed	IS5880 NS/CL	NS/CL	CL	CMAX	X	X	X	X
Interstate Seed	IS6131 NS/DM	NS/DM		CMAX	X	X	X	X
Interstate Seed	IS7120 HO/DM	HO/DM		CMAX	X	X	X	X
King Seed Inc.	SunKing 4404NS/CL	NS	CL	CDM		X	X	X
King Seed Inc.	SunKing 4500NS	NS		CDM		X	X	X
King Seed Inc.	SunKing 4505	Trad.		CDM		X	X	X
Legend Seeds	LSF 121N	NS		CDM		X	X	X
Legend Seeds	LSF 142N	NS		CDM		X	X	X
Legend Seeds	LSF 223NCL	NS	CL	CDM		X	X	X
Monsanto	MH6641	NS/DM		CMAX	X	X	X	X
Mycogen Seeds	8D480	NS		CMAX		X	X	
Mycogen Seeds	8H350DM	HO		CMAX		X		
Mycogen Seeds	8H449DM	HO		CMAX	X	X	X	X
Mycogen Seeds	8N270	NS		CMAX	X	X		
Mycogen Seeds	8N358CL	NS	CL	CMAX	X	X	X	X
Mycogen Seeds	8N386CL	NS	CL	CMAX	X	X	X	X
Mycogen Seeds	8N453DM	NS		CMAX	X	X	X	X
Mycogen Seeds	8N510	NS		CMAX	X	X	X	X
Pannar Seed Inc.	PANNAR 8330NS	NS		CDM	X	X	X	X
Pannar Seed Inc.	PANNAR 7813NS	NS		CDM	X	X	X	X
Pannar Seed Inc.	PANNAR 7924NS	NS		CDM	X	X	X	X
Pannar Seed Inc.	PANNAR 9501	Trad.		CDM	X	X	X	X
Pannar Seed Inc.	PANNAR EX2453NS	NS		CDM	X	X	X	X
Pannar Seed Inc.	PANNAR 9501DM	NS		CDM	X	X	X	X
Producers Hybrids	SF7105NS	NS		CR		X	X	X
Producers Hybrids	SF7203	Trad.		CR		X	X	X
Producers Hybrids	SF7303	NS		CR		X	X	X
Proseed	Proseed 6004	NS		CDM	X	X	X	X
Proseed	Proseed 6294	NS	CL	CDM	X	X	X	X
Proseed	Proseed 6481	NS		CDM	X	X	X	X
Proseed	Proseed E-3	NS		CDM	X	X	X	X
Proseed	Proseed E-4	NS		CDM	X	X	X	X

Table 2 (cont.).

Brand	Hybrid	Hybrid Type	Herb. Resist.	Seed* Treatmnt	Bison	Eureka	Miller	Presho
Proseed	Proseed E-5	NS		CDM	X	X	X	X
Proseed	Proseed E-85	HO		CDM		X		X
Proseed	Proseed EE-1	NS		CDM	X	X	X	X
Proseed	Proseed EE-2	NS		CDM	X	X	X	X
Seeds 2000	Barracuda	NS	CL	CDM		X	X	X
Seeds 2000	Blazer	NS		CDM		X	X	X
Seeds 2000	Sierra	HO		CDM		X	X	X
Seeds 2000	Firebird NS-SU	NS	SU	CDM		X	X	X
Triumph Seed	645	NS		CDM		X		
Triumph Seed	660CL	NS	CL	CDM			X	X
Triumph Seed	845HO	HO		CDM			X	
Triumph Seed	R859HOCL	HO	CL	CDM			X	
Triumph Seed	s672	NS		CDM		X		
Triumph Seed	s675	NS		CDM	X	X	X	X
Triumph Seed	s678	NS		CDM	X	X	X	X
Triumph Seed	TRX7434HOCL	HO	CL	CDM			X	X
Triumph Seed	TRX7442	NS		CDM		X		
Triumph Seed	R664	NS		CDM			X	
Triumph Seed	R657	NS		CDM			X	
Triumph Seed	TRX7449	NS		CDM			X	X
Triumph Seed	TRXs5423	NS		CDM			X	
Triumph Seed	TRXs7424	NS		CDM			X	
Triumph Seed	TRXs7425HOCL	HO	CL	CDM		X	X	X
Triumph Seed	TRXs7426HO	HO		CDM			X	X
USDA	Hyb. 894 (check)	Trad.			X	X	X	X
USDA	cmsHA412/ RHA409(chk)	Trad.			X	X	X	X

* CR = Cruiser, CDM = Cruiser DM Pak, CMAX = CruiserMaxx Sunflower.

Table 3. Hybrids tested in the 2007 South Dakota confection hybrid sunflower trials.

Brand	Hybrid		Seed* Treatmnt	Miller
CHS Inc.	06EXP02			X
CHS Inc.	07EXP01			X
CHS Inc.	RH1121			X
CHS Inc.	RH1122			X
Dahlgren & Co.	9519		CDM	X
Dahlgren & Co.	9530		CDM	X
Dahlgren & Co.	9569		CDM	X
Dahlgren & Co.	9579		CDM	X
Dahlgren & Co.	9583CL	CL	CDM	X
Mycogen Seeds	8C482		CMAX	X
Red River Commodities	2215		CDM	X
Red River Commodities	2216		CDM	X
Red River Commodities	EX41		CDM	X
Seeds 2000	Panther			X
SunOpta Sunflower	SS38A		Maxim/Dyn/Apron	X
Triumph Seed	777C			X
Triumph Seed	TRX7352C			X
USDA	924 (check)			X

* CR = Cruiser, CDM = Cruiser DM Pak, CMAX = CruiserMaxx Sunflower.

Table 4. Oilseed sunflower hybrid trial - Bison, SD 2007.

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Test Wt. lb/bu	Pop. 1000 pl/A
Dekalb	DKF29-30	NS/DM	1235	42.5	120	10	23.9	13.2
Dekalb	DKF34-33	NS/DM	850	43.2	119	0	29.1	10.8
Dekalb	DKF34-80CL	NS/DM/CL	1345	41.5	125	0	22.8	12.2
Dekalb	DKF37-31	NS	1411	42.0	118	0	24.4	12.4
Dekalb	DKF38-45	NS	1865	42.9	126	1	24.8	10.2
Dekalb	DKF38-75	Trad.	1679	40.4	107	0	24.5	13.8
Garst Seed	XF06NS16	NS	1096	38.8	122	0	19.8	15.3
Garst Seed	XF07NC82	NS/CL	1319	39.0	128	11	24.7	14.7
Garst Seed	XF07NS75	NS	1254	42.0	144	4	27.6	14.4
Garst Seed	XF07NC68	NS/CL	2064	40.3	125	1	22.1	14.8
Interstate Seed	IS4668 NS/CL	NS/CL	1407	39.0	138	0	22.4	15.4
Interstate Seed	IS5770 NS	NS	1160	39.4	135	1	25.7	14.0
Interstate Seed	IS5880 NS/CL	NS/CL	928	39.1	133	2	20.3	13.8
Interstate Seed	IS6131 NS/DM	NS/DM	1323	44.6	118	0	27.2	10.5
Interstate Seed	IS7120 HO/DM	HO/DM	1255	41.9	126	0	22.9	12.9
Monsanto	MH6641	NS/DM	2312	41.5	109	0	22.7	15.1
Mycogen Seeds	8H449DM	HO	1273	46.1	133	0	24.8	12.8
Mycogen Seeds	8N270	NS	1454	40.3	105	1	23.9	15.1
Mycogen Seeds	8N358CL	NS/CL	666	41.4	126	0	25.6	13.1
Mycogen Seeds	8N386CL	NS/CL	1481	40.9	139	0	21.5	15.1
Mycogen Seeds	8N453DM	NS	1815	44.5	132	1	24.8	14.4
Mycogen Seeds	8N510	NS	1630	40.3	122	0	22.2	16.0
Pannar Seed Inc.	PANNAR 8330NS	NS	1669	38.3	115	0	22.4	13.7
Pannar Seed Inc.	PANNAR 7813NS	NS	2008	38.7	134	0	20.9	11.3
Pannar Seed Inc.	PANNAR 7924NS	NS	1704	38.4	137	3	22.4	12.7
Pannar Seed Inc.	PANNAR 9501	Trad.	1525	36.5	149	1	21.9	14.7
Pannar Seed Inc.	PANNAR EX2453NS	NS	1476	41.3	131	0	22.6	15.4
Pannar Seed Inc.	PANNAR 9501DM	NS	1085	37.6	143	0	24.1	16.1
Proseed	Proseed 6004	NS	1030	40.1	148	0	27.6	15.9
Proseed	Proseed 6294	NS/CL	1160	43.0	131	1	28.1	15.1
Proseed	Proseed 6481	NS	1132	40.5	139	0	22.5	12.8
Proseed	Proseed E-3	NS	1388	40.9	127	1	24.0	15.0
Proseed	Proseed E-4	NS	919	42.4	135	2	24.1	10.9
Proseed	Proseed E-5	NS	1393	37.8	138	1	20.9	14.9
Proseed	Proseed EE-1	NS	1560	35.6	137	0	23.1	9.8
Proseed	Proseed EE-2	NS	1413	34.8	148	3	25.1	13.8
Triumph Seed	s675	NS	964	43.6	94	0	23.4	15.3
Triumph Seed	s678	NS	1650	43.0	110	0	21.5	14.5
USDA	Hyb. 894 (check)	Trad.	867	42.4	127	0	25.4	13.1
USDA	cmsHA412/RHA409(chk)	Trad.	986	44.5	132	1	24.3	8.7
	Grand mean		1385	40.9	126	1	23.6	13.5
	LSD 5%		574	1.6	15	4	2.6	4.0
	C.V.		20.4	2.4	7.1	161.8	6.7	14.7

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.

Planted June 11, 2007.

Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Cooperator: Duane Shea, Bison, SD.

Table 5. Oilseed sunflower hybrid trial, Eureka, SD - 2007.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2007	2006	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Scler Hd Rot %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Advanta Pacific, LLC	AP534 NS/CL	NS/CL	2161	1223	1692	45.2	171	0	0.0	11.6	28.6	17.4
Advanta Pacific, LLC	AP561 NS	NS	2136	--	--	46.4	169	0	0.4	12.2	28.8	16.3
Advanta Pacific, LLC	F51132NS/CL/DM	NS/CL	1652	--	--	47.7	164	0	0.4	12.1	27.9	17.4
Advanta Pacific, LLC	F51311 NS/DM	NS	2290	--	--	46.0	169	0	0.0	12.9	28.7	17.4
Dekalb	DKF29-30	NS/DM	1941	--	--	47.1	164	0	0.0	10.9	30.2	17.4
Dekalb	DKF34-33	NS/DM	2277	--	--	48.0	162	0	0.4	11.6	30.0	17.4
Dekalb	DKF34-80CL	NS/DM/CL	1764	--	--	47.7	166	0	2.5	11.5	28.9	17.4
Dekalb	DKF37-31	NS	2138	1269	1704	47.0	175	0	1.7	11.5	30.3	17.4
Dekalb	DKF38-45	NS	2577	1172	1874	48.3	174	0	0.0	11.7	29.9	17.4
Dekalb	DKF38-75	Trad.	2365	--	--	49.0	177	0	4.2	11.9	31.1	17.4
Garst Seed	XF06NS16	NS	2331	--	--	45.3	157	0	0.0	12.7	29.1	17.4
Garst Seed	XF07NC82	NS/CL	1690	--	--	48.1	161	0	0.0	10.3	27.8	17.4
Garst Seed	XF07NS75	NS	2075	--	--	47.1	166	0	2.1	12.4	30.2	17.4
Garst Seed	XF07NC68	NS/CL	1864	--	--	48.9	156	0	1.7	12.3	28.1	17.4
Interstate Seed	IS4668 NS/CL	NS/CL	2213	1403	1808	43.7	175	0	0.0	12.4	27.6	17.4
Interstate Seed	IS5770 NS	NS	2093	1466	1780	46.0	179	0	0.0	12.2	29.6	17.4
Interstate Seed	IS5880 NS/CL	NS/CL	1561	954	1257	45.7	168	0	0.0	12.0	27.2	17.4
Interstate Seed	IS6131 NS/DM	NS/DM	1812	--	--	48.9	158	1	0.8	10.9	30.3	17.4
Interstate Seed	IS7120 HO/DM	HO/DM	2254	--	--	47.6	160	0	0.4	11.8	29.4	16.3
King Seed Inc.	SunKing 4404NS/CL	NS/CL	2082	1326	1704	45.3	177	0	2.1	12.0	27.8	16.1
King Seed Inc.	SunKing 4500NS	NS	2129	1296	1712	46.6	177	1	1.3	12.9	29.0	17.4
King Seed Inc.	SunKing 4505	Trad.	1758	1321	1540	47.8	177	0	1.7	10.6	28.0	17.4
Legend Seeds	LSF 121N	NS	1785	979	1382	45.8	151	0	0.0	12.4	29.0	17.4
Legend Seeds	LSF 142N	NS	2421	1232	1826	46.3	170	0	0.0	13.2	28.5	17.4
Legend Seeds	LSF 223NCL	NS/CL	2280	1548	1914	45.2	173	0	0.8	12.5	28.7	17.4
Monsanto	MH6641	NS/DM	2851	--	--	47.6	169	0	0.8	12.4	30.4	17.4
Mycogen Seeds	8D480	NS	2153	--	--	45.0	170	0	0.8	12.3	29.6	17.4
Mycogen Seeds	8H350DM	HO	1955	828	1391	47.9	172	0	1.7	11.9	29.0	17.4
Mycogen Seeds	8H449DM	HO	2565	--	--	49.6	174	0	0.8	12.8	29.9	17.4
Mycogen Seeds	8N270	NS	2143	--	--	45.3	156	1	2.1	11.3	29.1	17.4
Mycogen Seeds	8N358CL	NS/CL	2544	--	--	46.4	164	0	2.5	12.0	30.2	17.4
Mycogen Seeds	8N386CL	NS/CL	1989	784	1387	45.1	177	0	4.6	11.9	27.7	17.4
Mycogen Seeds	8N453DM	NS	2055	916	1486	50.1	162	0	1.3	12.7	29.9	17.4
Mycogen Seeds	8N510	NS	2942	1541	2241	45.1	175	0	1.3	12.4	28.3	17.4
Pannar Seed Inc.	PANNAR 8330NS	NS	2091	--	--	45.6	160	0	0.0	12.7	30.1	17.4
Pannar Seed Inc.	PANNAR 7813NS	NS	2340	1406	1873	45.3	165	0	0.8	12.9	28.7	17.4
Pannar Seed Inc.	PANNAR 7924NS	NS	2381	1333	1857	46.0	162	0	0.4	12.9	28.7	17.4
Pannar Seed Inc.	PANNAR 9501	Trad.	2518	--	--	45.4	183	0	0.8	12.2	29.8	17.4
Pannar Seed Inc.	PANNAR EX2453NS	NS	1946	956	1451	46.7	166	2	0.0	12.5	29.6	17.4
Pannar Seed Inc.	PANNAR 9501DM	NS	1502	--	--	45.2	189	0	2.5	10.9	28.7	17.4
Producers Hybrids	SF7105NS	NS	1599	--	--	46.1	158	0	0.0	12.2	30.2	17.4
Producers Hybrids	SF7203	Trad.	1710	--	--	46.3	180	0	0.4	10.7	28.1	17.4
Producers Hybrids	SF7303	NS	2483	--	--	46.9	166	0	0.0	12.5	29.3	17.4
Proseed	Proseed 6004	NS	1723	--	--	44.7	187	0	0.0	12.2	30.2	17.4
Proseed	Proseed 6294	NS/CL	1280	--	--	46.1	181	2	0.8	9.2	29.8	17.4
Proseed	Proseed 6481	NS	1731	--	--	45.5	189	1	0.0	10.1	28.3	17.4
Proseed	Proseed E-3	NS	1599	--	--	46.4	159	0	1.3	11.7	28.1	17.4
Proseed	Proseed E-4	NS	1744	--	--	45.4	166	0	1.7	11.6	27.3	17.4

Table 5. (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2007	2006	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Scler Hd Rot %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Proseed	Proseed E-5	NS	2003	--	--	44.9	176	0	0.8	12.7	28.3	17.4
Proseed	Proseed E-85	HO	1985	--	--	46.3	174	0	0.0	11.7	27.2	17.4
Proseed	Proseed EE-1	NS	1947	--	--	44.2	175	0	1.7	11.1	28.7	17.4
Proseed	Proseed EE-2	NS	1889	--	--	43.5	171	0	1.3	10.8	29.7	17.4
Seeds 2000	Barracuda	NS/CL	2170	1124	1647	47.1	176	0	0.0	13.1	29.5	17.4
Seeds 2000	Blazer	NS	1985	1253	1619	48.8	157	0	0.4	13.6	29.1	17.4
Seeds 2000	Sierra	HO	2215	1022	1618	46.2	176	0	0.0	12.1	26.5	17.4
Seeds 2000	Firebird NS-SU	NS/SU	2750	--	--	46.1	149	0	0.0	13.2	28.7	17.4
Triumph Seed	645	NS	2182	1616	1899	49.3	170	1	1.3	12.6	28.1	17.4
Triumph Seed	s672	NS	1668	1031	1350	48.0	110	0	3.8	12.5	28.5	17.4
Triumph Seed	s675	NS	2186	1324	1755	47.4	132	0	1.7	13.5	28.1	17.4
Triumph Seed	s678	NS	2047	1328	1687	47.9	135	0	0.8	13.3	29.1	17.4
Triumph Seed	TRX7442	NS	2692	--	--	46.5	171	0	0.8	11.9	27.7	17.4
Triumph Seed	TRXs7425HOCL	HO/CL	2132	--	--	46.7	128	0	0.8	11.9	29.2	17.4
USDA	Hyb. 894 (check)	Trad.	1638	977	1308	49.4	148	0	2.9	10.7	28.4	17.4
USDA	cmsHA412/RHA409(chk)	Trad.	1724	--	--	49.8	172	0	3.3	10.6	28.5	17.4
	Grand mean		2065	1144	1605	46.7	165	0	1.1	12.0	28.9	17.4
	LSD 5%		416	299		2.0	10	ns	2.0	0.9	1.2	ns
	C.V.		14.4	18.8		3.1	4.3	399.6	127.8	5.4	3.0	2.8

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 5, 2007. Harvested November 1, 2007.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 6. Oilseed sunflower hybrid trial, Miller, SD - 2007.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2007	2006	2-yr Avg.	Oil %	Days to Flwr	Days to Mat	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Hulling Quality Test
Dahlgren & Co.	4421ND	NS	2024	1364	1694	43.0	57	101	174	14	12.9	27.4	Excel
Dahlgren & Co.	EX4370	Trad.	1544	--	--	46.5	54	95	142	10	10.8	29.7	Poor
Dahlgren & Co.	EX4377NS	NS	1639	--	--	45.9	54	97	138	7	11.1	28.6	Poor
Dahlgren & Co.	EX4455NS	NS	1884	--	--	43.9	58	109	159	3	10.5	29.0	Excel
Dekalb	DKF29-30	NS/DM	1234	--	--	46.1	57	97	165	38	11.7	28.3	
Dekalb	DKF34-33	NS/DM	1190	--	--	46.2	57	99	160	53	10.9	30.3	
Dekalb	DKF34-80CL	NS/DM/CL	1142	--	--	46.3	59	100	162	2	11.6	28.8	
Dekalb	DKF37-31	NS	2200	--	--	45.8	59	104	168	11	11.5	29.0	
Dekalb	DKF38-45	NS	1758	--	--	47.5	58	102	137	19	12.2	29.7	
Dekalb	DKF38-75	Trad.	1841	--	--	47.4	60	102	173	13	12.2	29.5	
Garst Seed	XF06NS16	NS	1043	--	--	46.2	56	102	153	54	12.2	29.1	
Garst Seed	XF07NC82	NS/CL	2051	--	--	46.9	57	96	145	4	10.9	28.2	
Garst Seed	XF07NS75	NS	1833	--	--	45.7	59	107	162	12	12.2	28.8	
Garst Seed	XF07NC68	NS/CL	2199	--	--	48.8	60	103	164	3	10.9	28.3	
Interstate Seed	IS4668 NS/CL	NS/CL	1982	1706	1844	45.6	61	109	181	6	11.7	28.7	
Interstate Seed	IS5770 NS	NS	1313	1342	1327	44.5	58	101	166	8	11.5	28.8	
Interstate Seed	IS5880 NS/CL	NS/CL	1817	924	1371	44.8	60	101	155	12	10.1	28.1	
Interstate Seed	IS6131 NS/DM	NS/DM	2028	--	--	47.3	58	99	171	7	11.0	29.9	
Interstate Seed	IS7120 HO/DM	HO/DM	2164	--	--	46.5	57	99	153	2	11.4	28.6	
King Seed Inc.	SunKing 4404NS/CL	NS/CL	2272	1759	2016	44.3	61	106	166	10	13.4	28.4	
King Seed Inc.	SunKing 4500NS	NS	2134	1653	1894	46.5	60	106	162	11	11.9	28.2	
King Seed Inc.	SunKing 4505	Trad.	1670	911	1290	49.0	60	102	158	7	11.2	28.1	
Legend Seeds	LSF 121N	NS	997	1214	1105	45.4	57	103	152	22	11.9	29.1	
Legend Seeds	LSF 142N	NS	2449	1852	2151	45.3	61	104	150	8	12.9	28.5	
Legend Seeds	LSF 223NCL	NS/CL	1748	1540	1644	44.9	60	107	169	19	11.6	28.0	
Monsanto	MH6641	NS/DM	2304	--	--	47.5	60	101	153	6	12.4	28.4	
Mycogen Seeds	8D480	NS	2784	--	--	43.2	59	110	173	4	11.9	28.8	Excel
Mycogen Seeds	8H449DM	HO	2030	--	--	47.0	59	104	159	13	11.7	29.2	
Mycogen Seeds	8N358CL	NS/CL	1869	--	--	45.4	58	103	145	11	9.8	28.0	
Mycogen Seeds	8N386CL	NS/CL	1746	1453	1600	45.4	59	105	176	3	10.9	28.6	
Mycogen Seeds	8N453DM	NS	1855	1498	1677	48.6	59	108	147	28	12.5	29.5	
Mycogen Seeds	8N510	NS	2205	1605	1905	46.0	60	104	149	9	11.4	28.3	
Pannar Seed Inc.	PANNAR 8330NS	NS	1894	--	--	44.9	59	98	160	3	11.5	29.1	
Pannar Seed Inc.	PANNAR 7813NS	NS	2686	1430	2058	46.1	59	103	159	8	11.9	30.5	
Pannar Seed Inc.	PANNAR 7924NS	NS	2217	1560	1888	44.9	61	106	179	11	11.7	27.5	Poor
Pannar Seed Inc.	PANNAR 9501	Trad.	2027	1542	1785	45.7	62	110	174	10	12.5	28.0	
Pannar Seed Inc.	PANNAR EX2453NS	NS	1667	1490	1578	46.2	60	103	169	36	12.5	29.0	
Pannar Seed Inc.	PANNAR 9501DM	NS	1283	--	--	44.9	60	104	163	9	12.5	28.2	
Producers Hybrids	SF7105NS	NS	865	--	--	44.9	54	102	141	48	12.5	28.9	
Producers Hybrids	SF7203	Trad.	1761	1420	1590	46.6	60	99	164	8	11.2	29.2	
Producers Hybrids	SF7303	NS	2088	2099	2093	45.0	62	102	136	2	11.5	28.6	
Proseed	Proseed 6004	NS	1462	--	--	46.8	61	103	197	23	11.6	29.8	
Proseed	Proseed 6294	NS/CL	1297	--	--	46.6	60	98	171	40	12.0	28.9	
Proseed	Proseed 6481	NS	1460	--	--	44.7	60	99	174	42	12.6	27.5	
Proseed	Proseed E-3	NS	1666	--	--	45.7	59	98	147	16	11.7	28.4	
Proseed	Proseed E-4	NS	1842	--	--	45.9	58	98	164	12	9.8	28.7	
Proseed	Proseed E-5	NS	1759	--	--	44.3	60	106	169	37	12.1	28.2	
Proseed	Proseed EE-1	NS	1512	--	--	44.1	58	96	160	17	10.7	28.4	
Proseed	Proseed EE-2	NS	1497	--	--	44.2	60	101	178	29	12.0	27.4	

Table 6. (cont.).

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2007	2006	2-yr Avg.	Oil %	Days to Flwr	Days to Mat	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Hulling Quality Test
Seeds 2000	Barracuda	NS/CL	1337	1483	1410	45.4	60	104	157	21	14.5	28.4	
Seeds 2000	Blazer	NS	1994	1821	1908	47.0	59	104	146	4	11.4	29.8	
Seeds 2000	Sierra	HO	2076	1667	1871	46.8	62	105	156	6	10.9	27.2	
Seeds 2000	Firebird NS-SU	NS/SU	2265	--	--	43.6	62	105	161	3	11.9	28.0	
Triumph Seed	660CL	NS/CL	2215	1893	2054	46.2	61	106	172	11	13.0	29.4	
Triumph Seed	845HO	HO	1707	1894	1800	47.7	61	107	163	24	11.5	26.1	
Triumph Seed	R859HOCL	HO/CL	2089	--	--	47.3	62	110	167	4	11.0	28.8	
Triumph Seed	s675	NS	2323	2274	2299	47.5	64	113	119	0	11.9	28.9	
Triumph Seed	s678	NS	2443	2091	2267	49.3	63	108	137	0	11.3	29.4	
Triumph Seed	TRX7434HOCL	HO/CL	2313	--	--	47.0	63	108	168	5	11.7	30.9	
Triumph Seed	R664	NS	1832	--	--	48.4	61	108	176	12	12.8	28.9	
Triumph Seed	R657	NS	1166	--	--	45.1	60	107	170	23	12.3	28.3	
Triumph Seed	TRX7449	NS	1927	--	--	46.8	63	108	162	7	12.8	28.2	
Triumph Seed	TRXs5423	NS	2343	1966	2155	46.4	61	104	102	0	10.0	28.2	
Triumph Seed	TRXs7424	NS	2345	--	--	47.5	62	108	123	3	10.9	27.9	
Triumph Seed	TRXs7425HOCL	HO/CL	2714	--	--	46.9	64	110	102	0	11.7	28.7	
Triumph Seed	TRXs7426HO	HO	2059	--	--	48.4	62	108	139	1	11.8	29.5	
USDA	Hyb. 894 (check)	Trad.	1606	1323	1464	47.7	58	100	167	36	11.5	28.2	
USDA	cmsHA412/ RHA409(chk)	Trad.	1493	--	--	48.5	57	95	151	38	12.6	27.1	
	Grand mean		1879	1446	1662	46.2	60	104	155	14	11.7	28.7	
	LSD 5%		502	392		2.3	1	4	22	22	1.4	1.6	
	C.V.		16.6	19.5		3.6	1.2	2.6	8.8	98.6	7.6	3.4	

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 6, 2007. Harvested October 25, 2007.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 7. Oilseed sunflower hybrid trial, Presho, SD - 2007.

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Dekalb	DKF29-30	NS/DM	1738	43.5	155	0	9.5	25.0	17.4
Dekalb	DKF34-33	NS/DM	1413	44.0	142	2	11.2	26.3	16.3
Dekalb	DKF34-80CL	NS/DM/CL	1716	43.4	141	0	10.6	25.2	17.4
Dekalb	DKF37-31	NS	1899	42.5	149	0	12.2	26.1	17.0
Dekalb	DKF38-45	NS	2117	41.7	140	0	10.5	25.4	17.4
Dekalb	DKF38-75	Trad.	2334	42.7	146	0	11.0	27.2	17.4
Garst Seed	XF06NS16	NS	2058	41.0	135	0	13.4	25.5	17.4
Garst Seed	XF07NC82	NS/CL	1846	39.3	130	0	9.6	23.9	17.4
Garst Seed	XF07NS75	NS	2048	44.9	153	2	10.6	27.0	16.3
Garst Seed	XF07NC68	NS/CL	1524	42.5	141	0	11.0	25.0	17.4
Interstate Seed	IS4668 NS/CL	NS/CL	2047	41.9	153	0	12.1	25.5	17.4
Interstate Seed	IS5770 NS	NS	1831	42.1	150	0	13.2	26.0	17.4
Interstate Seed	IS5880 NS/CL	NS/CL	1738	40.9	148	0	11.4	24.3	17.2
Interstate Seed	IS6131 NS/DM	NS/DM	1670	43.3	140	1	10.1	25.1	17.4
Interstate Seed	IS7120 HO/DM	HO/DM	1818	42.8	135	0	10.5	25.6	17.4
King Seed Inc.	SunKing 4404NS/CL	NS/CL	2257	42.3	148	0	11.9	25.2	17.4
King Seed Inc.	SunKing 4500NS	NS	2014	42.9	151	0	12.3	25.7	17.4
King Seed Inc.	SunKing 4505	Trad.	1890	45.2	148	0	11.8	25.3	16.3
Legend Seeds	LSF 121N	NS	1443	41.4	136	0	10.9	25.5	17.4
Legend Seeds	LSF 142N	NS	1575	42.9	144	0	10.9	26.0	17.4
Legend Seeds	LSF 223NCL	NS/CL	2088	41.5	155	0	11.8	25.7	17.4
Monsanto	MH6641	NS/DM	1772	42.2	138	0	10.9	26.7	17.4
Mycogen Seeds	8H449DM	HO	1811	43.8	154	0	12.3	26.1	17.4
Mycogen Seeds	8N358CL	NS/CL	2005	42.7	149	0	9.0	25.0	17.4
Mycogen Seeds	8N386CL	NS/CL	1968	42.4	151	0	11.8	25.5	17.4
Mycogen Seeds	8N453DM	NS	1962	43.5	149	0	11.5	27.1	17.4
Mycogen Seeds	8N510	NS	2315	43.6	154	0	11.2	25.5	17.4
Pannar Seed Inc.	PANNAR 8330NS	NS	1620	41.8	136	0	10.9	25.5	17.0
Pannar Seed Inc.	PANNAR 7813NS	NS	2080	42.6	134	0	10.7	25.7	17.0
Pannar Seed Inc.	PANNAR 7924NS	NS	1952	41.5	142	0	12.0	24.8	17.4
Pannar Seed Inc.	PANNAR 9501	Trad.	1753	42.0	147	0	10.2	26.2	17.4
Pannar Seed Inc.	PANNAR EX2453NS	NS	1833	42.5	140	1	11.3	25.7	17.4
Pannar Seed Inc.	PANNAR 9501DM	NS	1718	42.2	147	0	11.3	27.0	17.4
Producers Hybrids	SF7105NS	NS	1806	41.8	133	1	12.4	27.1	17.4
Producers Hybrids	SF7203	Trad.	1838	44.8	154	0	9.7	25.9	17.0
Producers Hybrids	SF7303	NS	2110	41.4	144	0	11.1	26.0	17.4
Proseed	Proseed 6004	NS	1470	42.3	161	0	12.0	25.7	16.8
Proseed	Proseed 6294	NS/CL	1466	42.4	152	0	9.7	26.7	17.4
Proseed	Proseed 6481	NS	1846	41.3	160	0	9.4	24.4	17.4
Proseed	Proseed E-3	NS	1919	42.1	142	0	10.1	25.9	17.4
Proseed	Proseed E-4	NS	2020	42.9	143	0	10.2	25.8	15.9
Proseed	Proseed E-5	NS	1693	41.6	161	0	11.8	25.6	17.4
Proseed	Proseed E-85	HO	1838	42.3	153	1	10.8	25.0	17.4
Proseed	Proseed EE-1	NS	1751	40.8	146	0	12.2	25.2	17.4
Proseed	Proseed EE-2	NS	1898	40.2	150	0	9.9	25.0	17.4

Table 7. (cont.).

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Seeds 2000	Barracuda	NS/CL	1832	42.8	144	0	12.6	26.8	17.4
Seeds 2000	Blazer	NS	2109	43.9	129	0	11.9	27.0	17.4
Seeds 2000	Sierra	HO	1992	42.1	148	0	10.2	24.0	17.4
Seeds 2000	Firebird NS-SU	NS/SU	2026	41.6	135	1	12.3	25.7	17.4
Triumph Seed	660CL	NS/CL	1750	43.3	143	0	12.6	26.3	17.4
Triumph Seed	s675	NS	1537	43.6	103	0	13.4	25.7	17.4
Triumph Seed	s678	NS	1777	43.0	129	0	12.2	24.6	17.4
Triumph Seed	TRX7434HOCL	HO/CL	1769	42.1	153	0	12.0	27.2	16.3
Triumph Seed	TRX7449	NS	1811	43.3	149	0	11.5	25.8	17.4
Triumph Seed	TRXs7425HOCL	HO/CL	1922	44.1	99	0	13.2	25.5	17.4
Triumph Seed	TRXs7426HO	HO	1996	43.8	136	0	12.7	26.1	17.4
USDA	Hyb. 894 (check)	Trad.	1997	44.2	136	0	10.4	24.6	17.4
USDA	cmsHA412/RHA409(chk)	Trad.	1700	44.0	141	0	11.3	25.8	16.1
	Grand mean		1847	42.6	142	0	11.3	25.7	17.2
	LSD 5%		361	1.8	8	ns	1.4	1.3	ns
	C.V.		14.0	3.0	4.1	383.1	8.8	3.6	4.7

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 20, 2007. Harvested October 27, 2007.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Cooperator: Dennis Stanley, Presho, SD.

Table 8. Oilseed sunflower hybrid trial averaged over Miller, Eureka, and Presho, SD - 2007.

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Height cm	Lodg-ing %	Harv. Moist. %	Test Wt. lb/bu
Dekalb	DKF29-30	NS/DM	1636	45.5	161	13	10.7	27.8
Dekalb	DKF34-33	NS/DM	1625	46.1	155	18	11.2	28.9
Dekalb	DKF34-80CL	NS/DM/CL	1539	45.8	156	1	11.2	27.6
Dekalb	DKF37-31	NS	2078	45.4	164	4	11.7	28.5
Dekalb	DKF38-45	NS	2149	45.7	150	6	11.5	28.3
Dekalb	DKF38-75	Trad.	2179	46.3	165	4	11.7	29.3
Garst Seed	XF06NS16	NS	1810	44.4	148	18	12.8	27.9
Garst Seed	XF07NC68	NS/CL	1861	46.1	154	1	11.4	27.1
Garst Seed	XF07NC82	NS/CL	1861	44.9	145	1	10.3	26.6
Garst Seed	XF07NS75	NS	1984	45.8	160	5	11.7	28.6
Interstate Seed	IS4668 NS/CL	NS/CL	2079	43.8	170	2	12.1	27.3
Interstate Seed	IS5770 NS	NS	1744	44.2	165	3	12.3	28.1
Interstate Seed	IS5880 NS/CL	NS/CL	1704	43.9	157	4	11.1	26.5
Interstate Seed	IS6131 NS/DM	NS/DM	1836	46.4	157	3	10.7	28.4
Interstate Seed	IS7120 HO/DM	HO/DM	2077	46.0	149	1	11.3	27.9
King Seed Inc.	SunKing 4404NS/CL	NS/CL	2202	43.8	163	3	12.4	27.1
King Seed Inc.	SunKing 4500NS	NS	2091	45.5	163	4	12.4	27.6
King Seed Inc.	SunKing 4505	Trad.	1771	46.9	161	2	11.1	27.1
Legend Seeds	LSF 121N	NS	1407	43.9	146	7	11.7	27.9
Legend Seeds	LSF 142N	NS	2147	44.8	154	3	12.3	27.7
Legend Seeds	LSF 223NCL	NS/CL	2037	43.8	166	7	12.0	27.5
Monsanto	MH6641	NS/DM	2308	45.8	154	2	11.9	28.5
Mycogen Seeds	8H449DM	HO	2135	46.7	162	4	12.3	28.4
Mycogen Seeds	8N358CL	NS/CL	2138	44.7	153	4	10.3	27.7
Mycogen Seeds	8N386CL	NS/CL	1900	44.3	168	1	11.5	27.2
Mycogen Seeds	8N453DM	NS	1956	47.4	153	10	12.3	28.8
Mycogen Seeds	8N510	NS	2486	44.7	159	3	11.7	27.3
Pannar Seed Inc.	PANNAR 7813NS	NS	2367	44.8	153	3	11.8	28.3
Pannar Seed Inc.	PANNAR 7924NS	NS	2182	44.1	161	4	12.2	27.0
Pannar Seed Inc.	PANNAR 8330NS	NS	1867	44.3	152	1	11.7	28.3
Pannar Seed Inc.	PANNAR 9501	Trad.	2098	44.3	168	3	11.6	28.0
Pannar Seed Inc.	PANNAR 9501DM	NS	1500	44.3	166	3	11.6	28.0
Pannar Seed Inc.	PANNAR EX2453NS	NS	1814	45.3	158	13	12.1	28.1
Producers Hybrids	SF7105NS	NS	1422	44.4	144	16	12.4	28.7
Producers Hybrids	SF7203	Trad.	1768	46.2	166	3	10.6	27.7
Producers Hybrids	SF7303	NS	2226	44.4	149	1	11.7	27.9
Proseed	Proseed 6004	NS	1551	44.7	182	8	11.9	28.6
Proseed	Proseed 6294	NS/CL	1347	45.0	168	14	10.3	28.5
Proseed	Proseed 6481	NS	1678	43.7	175	14	10.7	26.7
Proseed	Proseed E-3	NS	1727	44.7	149	6	11.2	27.5

Table 8. (cont.).

Brand	Hybrid	Type*	Seed Yield lbs/A	Oil %	Plant Height cm	Lodging %	Harv. Moist. %	Test Wt. lb/bu
Proseed	Proseed E-4	NS	1868	44.8	158	4	10.5	27.2
Proseed	Proseed E-5	NS	1817	43.5	168	12	12.2	27.4
Proseed	Proseed EE-1	NS	1735	43.2	160	6	11.3	27.4
Proseed	Proseed EE-2	NS	1760	42.2	166	10	10.9	27.4
Seeds 2000	Barracuda	NS/CL	1778	45.0	159	7	13.4	28.2
Seeds 2000	Blazer	NS	2028	46.6	144	1	12.3	28.6
Seeds 2000	Sierra	HO	2093	45.0	160	2	11.1	25.9
Seeds 2000	Firebird NS-SU	NS/SU	2346	43.7	148	1	12.5	27.5
Triumph Seed	s675	NS	2014	46.3	118	0	12.9	27.6
Triumph Seed	s678	NS	2088	46.7	134	0	12.3	27.7
Triumph Seed	TRXs7425HOCL	HO/CL	2255	46.0	110	0	12.3	27.8
USDA	Hyb. 894 (check)	Trad.	1746	47.2	150	12	10.9	27.0
USDA	cmsHA412/ RHA409(chk)	Trad.	1638	47.6	155	13	11.5	27.1
Grand mean			1914	45.1	156	5	11.7	27.8
LSD 5%			415	1.4	11	ns	1.2	1.0
C.V.			15.4	3.1	5.8	140.8	7.4	3.4

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Yield is reported at 10% moisture.

Table 9. Confection hybrid sunflower trial - Miller, SD 2007.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2007	2006	2-yr	Days to Flwr	Days to Mat.	Plant Hght cm	Lodging %	Test Wt. lb/bu	% Seed Over Screen 22/64	20/64	18/64	Nutmeat %	Red Rust^ %
CHS Inc.	06EXP02	Conf.	1712	--	--	61	109	184	8	21.7	60.0	80.2	90.1	49.5	2.0
CHS Inc.	07EXP01	Conf.	1090	--	--	60	101	188	19	22.1	39.3	61.8	80.8	49.8	1.0
CHS Inc.	RH1121	Conf.	1501	--	--	63	111	182	7	23.1	52.5	76.1	89.6	49.8	0.5
CHS Inc.	RH1122	Conf.	1299	1195	1247	60	101	182	4	23.2	47.5	71.2	84.3	49.2	5.0
Dahlgren & Co.	9519	Conf.	1461	--	--	61	110	191	0	25.1	45.2	71.9	85.9	48.3	0.5
Dahlgren & Co.	9530	Conf.	1882	--	--	60	102	185	9	22.2	52.7	76.2	87.8	52.4	0.2
Dahlgren & Co.	9569	Conf.	1341	--	--	61	107	193	24	21.7	64.1	82.0	90.7	52.4	0.5
Dahlgren & Co.	9579	Conf.	1475	--	--	60	103	175	10	20.3	53.3	77.4	90.5	49.3	0.0
Dahlgren & Co.	9583CL	Conf/CL	1480	--	--	61	106	198	9	22.3	47.9	72.9	86.4	51.8	1.5
Mycogen Seeds	8C482	Conf.	1487	1539	1513	60	109	203	4	22.3	47.7	72.1	86.8	47.5	0.7
Red River Commodities	2215	Conf.	1659	1398	1528	61	106	187	5	22.2	46.9	74.1	89.4	51.6	0.5
Red River Commodities	2216	Conf.	1779	1430	1604	61	102	199	10	23.1	54.9	77.3	91.0	49.9	1.0
Red River Commodities	EX41	Conf.	1365	--	--	62	108	201	17	22.3	44.6	68.8	85.7	52.9	1.0
Seeds 2000	Panther	Conf.	1439	--	--	54	100	167	12	23.0	45.5	71.0	87.7	49.1	5.0
SunOpta Sunflower	SS38A	Conf.	1486	--	--	57	105	182	6	24.3	25.5	52.8	76.4	53.9	0.1
Triumph Seed	777C	Conf.	1324	1549	1437	63	108	177	30	21.8	49.2	72.9	86.1	52.5	0.6
Triumph Seed	TRX7352C	Conf.	1198	--	--	62	115	175	12	24.6	36.4	64.1	80.4	51.3	0.2
USDA	924 (check)	Conf.	1305	846	1076	60	101	189	11	22.7	30.6	52.1	74.0	52.0	3.0
Grand mean			1460	1330	1395	60	106	187	11	22.7	46.9	70.8	85.8	50.7	1.3
LSD 5%			381	335		1	4	16	8	1.6	10.7	8.0	5.8	ns	
C.V.			18.4	17.7		1.6	2.6	6.1	54.9	4.8	16.0	8.0	4.8	6.2	

* Conf.=Confection, CL=Clearfield.
^ Rust severity was estimated as the average percent leaf area affected on the upper 4 leaves of 5 consecutive plants.
Planted June 6, 2007. Harvested October 26, 2007.
Cooperator: Roger Bertsch, St. Lawrence, SD.

Table 10. Oilseed sunflower fatty acid profiles of selected hybrids -- Miller, SD 2007.

Sunflower Brand	Hybrid	Type*	Palmitic %	Stearic %	Oleic %	Linoleic %	Linolenic %	Saturated %
Dahlgren & Co.	4421ND	NS	3.0	3.1	81.0	10.0	0.0	8.8
Dahlgren & Co.	EX4370	Trad.	5.3	5.7	28.6	58.4	0.2	12.8
Dahlgren & Co.	EX4377NS	NS	3.9	4.8	70.0	18.7	0.0	10.9
Dahlgren & Co.	EX4455NS	NS	4.3	5.6	54.4	33.2	0.1	11.8
Pannar Seed Inc.	PANNAR 8330NS	NS	4.0	4.5	60.0	29.4	0.1	10.4
Pannar Seed Inc.	PANNAR 7813NS	NS	4.2	5.0	52.2	36.3	0.1	11.1
Pannar Seed Inc.	PANNAR 7924NS	NS	4.1	5.2	60.8	27.2	0.1	11.5
Pannar Seed Inc.	PANNAR EX2453NS	NS	4.3	5.1	64.4	23.6	0.0	11.4
Pannar Seed Inc.	PANNAR 9501DM	Trad.	4.3	7.8	25.2	60.9	0.1	13.7
Proseed	Proseed 6004	NS	3.5	5.0	74.8	14.2	0.1	10.8
Proseed	Proseed 6294	NS/CL	3.8	3.2	79.4	11.3	0.1	9.0
Proseed	Proseed EE-1	NS	3.0	3.9	87.8	3.0	0.1	8.9
Proseed	Proseed EE-2	NS	3.0	4.8	82.8	7.1	0.1	9.9
Triumph Seed	845HO	HO	2.8	2.7	89.2	3.2	0.1	7.3

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant.

EC 909
Revised
Annually

SUNFLOWER

2008 South Dakota Hybrid Performance Trials

Oilseed

Confection

COOPERATIVE EXTENSION SERVICE • SOUTH DAKOTA STATE UNIVERSITY • U.S. DEPARTMENT OF AGRICULTURE

List of Tables

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SDSU

SUNFLOWER

2008 South Dakota Hybrid Performance Trials
Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Eureka oilseed test (table 6) could be repeated in 2009 exactly as it was in 2008, the yield ranking of a hybrid that yielded 2672 lbs/A and one that yielded 2486 lbs/A might change places since their yield difference (186 lbs/A) is less than the indicated yield LSD value of 358 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Eureka in 2008. In contrast, a hybrid that yielded 2279 lbs/A at Eureka in 2008 would likely be lower yielding than one that yielded 2672 lbs/A if the two hybrids were grown again under similar conditions, because the difference between them in 2008 (2672 – 2279 = 393 lbs/A) exceeded the LSD value of 358 lbs/A.

The coefficient of variability (CV) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait, expressed as a percentage of the mean for that trait. Generally, trials with low CV rates are more reliable for making hybrid choices than trials with higher CV rates. Trials with CV rates not exceeding 15 to 20% may be considered reliable.

Look at as many trials as possible. It is unlikely that the environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20 to 25% may reduce bird damage and seed shattering loss during harvest. Seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, to races 1 and 2 of downy mildew, and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, to Phomopsis, or to sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to the aforementioned and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, for hulling, or for birdfeed.

2008 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Eureka, Miller, Onida, and Reliance). Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. Non-oilseed (confection) sunflower trials were conducted at Miller and Onida. Trial sites are indicated on the map in figure 1. Lists of hybrids planted at each site appear in tables 2 and 3

Climate

The 2008 growing season began with below normal temperatures in May and June. May precipitation was below average at Eureka, Miller, and Onida, but above average at Bison and Reliance. Areas of western South Dakota that had been consistently dry over the last 5 to 7 years saw large improvements in soil moisture conditions. June precipitation was close to 2 inches above normal at most locations, which delayed sunflower planting in the major sunflower growing regions of South Dakota. A summary of climate conditions near the sunflower test sites is presented in table 1. Average temperatures were near normal in July through October at all locations except Reliance, which had cooler than normal temperatures in September and October. Moisture conditions varied across locations in July through October. Bison was drier than normal in July and September, but wetter than normal in August and October. Eureka started off dry in May but then was wetter than normal throughout the remainder of the growing season. Miller had above average precipitation in June and July, but below average rainfall August through October. Onida had near or slightly above normal precipitation in July, September, and October, but below normal rainfall in August. Reliance was drier than normal in July and August, and wetter than normal in September and October. Winds behind a cold front in late October gusted to 50 to 60+ mph across the state, causing considerable seed shatter in the sunflower plots, especially in the confections. The first killing frost (<24°F) occurred on October 23 at Bison and on October 27 at the other test sites, 8 to 18 days later than normal.

Experimental Methods

Plots at all locations consisted of four rows 30-feet long, spaced 30-inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbor statistical analysis, which removes the effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was pretreated with Cruiser insecticide, and most was also treated with fungicide. Seed treatments used on individual hybrids are listed in tables 2 and 3. All trials except Bison were seeded no-till. The previous crop at Eureka was barley, at Miller it was corn, at Reliance and Onida it was milo, and at Bison it was wheat. Spartan herbicide was applied for weed control at all locations.

Plots were overseeded and thinned to a plant population of approximately 17,400 plants/acre. Stands were good everywhere except Bison.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Days from planting to physiological maturity (rated visually) was also recorded at Onida. Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was low at all locations for most hybrids. Some plots had a lot of heads broken off due to the high winds. These were counted as lodged plants. There was considerable seed shattering in the confections, particularly at Onida. The Onida confections were not harvested.

Plots at Onida, Miller, Eureka, and Reliance were harvested with a Gleaner Model K combine fitted with a two-row all row crop header. Plots at Bison were harvested with a Massey-Ferguson plot combine fitted with sunflower pans. Seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens.

A one-pint subsample of seed from each plot of the confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds, dehulling them, and then weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in tables 4 through 11. Yields of oilseed hybrids were highest at Reliance, averaging 2383 lbs/acre over all hybrids tested, with an average oil content of 47.4%. The lowest yield and oil was measured at Bison, which averaged 1,727 lbs/acre and 42.4% oil. Confection seed yield averaged 1,360 lbs/acre at Miller. In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

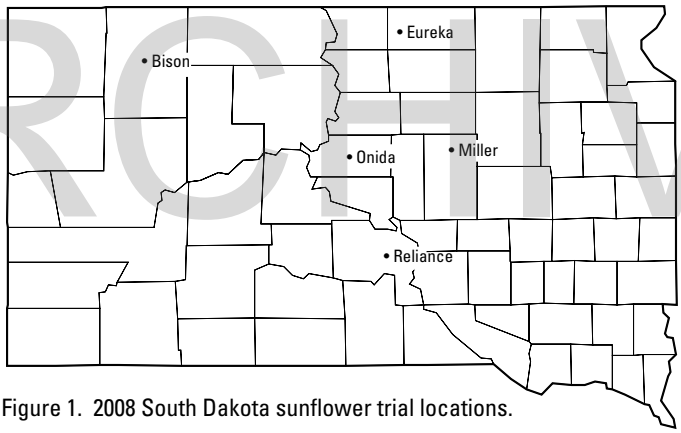

Figure 1. 2008 South Dakota sunflower trial locations.

Table 1. Climate summary for nearest weather stations to 2008 South Dakota sunflower test sites and departures from normal.

LOCATION-MONTH	2008 TEMPERATURE			TOTAL PRECIP IN.	DEPARTURE FROM NORMAL^			PRECIP IN.
	AVG MAX.	AVG MIN.	MEAN		MAX TEMP	MIN TEMP	AVG TEMP	
	----------°F----------				----------°F----------			
Bison*								
May	65	41	53	4.07	-5	-3	-4	1.35
June	74	50	62	4.91	-5	-3	-4	2.09
July	88	58	73	0.66	2	0	1	-1.61
August	87	58	72	2.47	1	1	1	1.00
September	75	46	60	0.63	0	-1	0	-0.57
October	60	35	47	2.55	-1	0	-1	1.09
Eureka*								
May	65	40	53	1.33	-4	-3	-4	-1.30
June	74	51	63	5.73	-4	-2	-3	2.56
July	85	59	72	3.68	0	1	1	0.90
August	83	58	70	2.73	-1	2	0	0.43
September	72	47	60	2.47	-1	2	0	1.04
October	58	35	47	2.64	-1	2	0	0.98
Miller*								
May	65	42	54	2.51	-3	-4	-3	-0.63
June	76	53	64	3.95	-2	-2	-3	1.05
July	84	60	72	4.61	-1	-1	-1	2.01
August	83	59	71	1.16	0	1	0	-0.85
September	74	46	60	1.43	0	-1	-1	-0.37
October	58	35	46	0.37	-3	0	-1	-1.40
Onida*								
May	66	41	53	2.00	-4	-3	-4	-0.85
June	76	52	64	5.02	-4	-2	-3	1.91
July	87	59	73	2.66	-1	0	0	-0.03
August	87	59	73	0.68	1	2	1	-1.46
September	75	47	61	1.89	-1	0	0	0.35
October	59	36	47	1.59	-3	2	-1	0.01
Reliance*								
May	69	42	55	4.30	-5	-4	-5	1.28
June	79	53	66	4.68	-5	-3	-4	1.70
July	90	62	76	2.07	-1	0	0	-0.71
August	88	59	74	0.98	-2	0	-1	-1.04
September	78	46	62	1.84	-2	-3	-3	0.41
October	63	35	49	2.52	-2	-1	-2	1.04

* Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

^ Departures from normal were determined by comparing 2008 observations to 30-yr averages (1971–2000) for each site.

Table 2. Hybrids tested in the 2008 South Dakota oilseed hybrid sunflower trials.

Brand	Hybrid	Hybrid Type[1]	Seed[2] Treatmnt	Bison	Eureka	Miller	Onida	Reliance
Advanta Pacific LLC	F30008NS,CL	NS/CL	CMAX	X		X	X	X
Advanta Pacific LLC	F30294NS,Rust	NS	CMAX		X	X		
Advanta Pacific LLC	F51132NS,CL	NS/CL	CMAX			X		
Advanta Pacific LLC	F51137NS,CL	NS/CL	CMAX		X	X	X	
Advanta Pacific LLC	F51139NS,DM,CL	NS/CL	CMAX		X	X	X	
Croplan Genetics	CG 306 DMR NS	NS		X	X	X	X	X
Croplan Genetics	CG 3080 DMR NS	NS		X	X	X	X	X
Croplan Genetics	CG 325 DMR NS	NS		X	X	X	X	X
Croplan Genetics	CG 356 NS	NS		X	X	X	X	X
Croplan Genetics	CG 369 DMR NS	NS		X	X	X	X	X
Croplan Genetics	CG 378 DMR NS	NS		X	X	X	X	X
Croplan Genetics	CG 528 CL NS	NS/CL		X	X	X	X	X
Croplan Genetics	CG 551 CL NS	NS/CL		X	X	X	X	X
Croplan Genetics	CG 564 CL NS	NS		X	X	X	X	X
Dahlgren & Co.	4421	NS	CR			X	X	
Dahlgren & Co.	4455	NS	CR			X	X	
Dahlgren & Co.	4370NS	NS	CR			X	X	
Dahlgren & Co.	4500CL	NS/CL	CR			X	X	
Dekalb	DKF 29-30	NS	CMAX	X	X	X	X	X
Dekalb	DKF 34-33	NS	CMAX	X	X	X	X	X
Dekalb	DKF 34-80CL	NS/CL	CMAX	X	X	X	X	X
Dekalb	DKF 37-31	NS	CMAX	X	X	X	X	X
Dekalb	DKF 38-45	NS	CMAX	X	X	X	X	X
Dekalb	DKF 3875	Trad.	CMAX	X	X	X	X	X
Dekalb	DKF 39-80CL	NS/CL	CMAX	X	X	X	X	X
Dekalb	IS 7120	HO	CMAX	X	X	X	X	X
Garst Seed Co.	4651NS	NS	CR	X	X		X	X
Garst Seed Co.	NX43489	NS	CR	X	X		X	X
Garst Seed Co.	NX44166	HO	CR	X	X		X	X
King Seed Inc.	SunKing 4404 NSCL	NS/CL	CR	X	X	X	X	X
King Seed Inc.	SunKing 4505	Trad.	CR	X	X	X	X	X
Legend Seeds	LSF 318NCL	NS/CL			X	X	X	X
Monsanto	MH6640	NS	CMAX	X	X	X	X	X
Monsanto	MH6643	NS	CMAX	X	X	X	X	X
Monsanto	MH7632	NS	CMAX	X	X	X	X	X
Monsanto	MH7633	NS	CMAX	X	X	X	X	X
Mycogen Seeds	8D481	NS	CMAX	X	X	X	X	X
Mycogen Seeds	8H449DM	HO	CMAX	X	X	X	X	X
Mycogen Seeds	8N187	NS	CMAX	X	X	X	X	X
Mycogen Seeds	8N270	NS	CMAX	X	X	X	X	X
Mycogen Seeds	8N358CL	NS/CL	CMAX	X	X	X	X	X
Mycogen Seeds	8N453DM	NS	CMAX	X	X	X	X	X
Mycogen Seeds	8N510	NS	CMAX	X	X	X	X	X
Pannar	Pan 7813	NS		X	X	X	X	X
Pannar	Pan 7924	NS		X	X	X	X	X
Pannar	Pan 7986	NS		X	X	X	X	X
Pannar	Pan 9501	Trad.		X	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63M91	NS				X	X	X

Table 2 (cont.).

Brand	Hybrid	Hybrid Type[1]	Seed[2] Treatmnt	Bison	Eureka	Miller	Onida	Reliance
Pioneer Hi-Bred	Pioneer Brand 63N82	NS/SU				X	X	X
Pioneer Hi-Bred	Pioneer Brand 64H41	HO				X	X	X
Seeds 2000	Barracuda CL-NS	NS/CL	CMAX		X	X	X	X
Seeds 2000	Blazer CL-NS	NS/CL	CMAX		X	X	X	X
Seeds 2000	Firebird-Expsun-NS	NS/SU	CMAX		X	X	X	X
Seeds 2000	Sierra HO	HO	CMAX		X	X	X	X
Technology Crops Int'l	Olimax	HO			X			
Technology Crops Int'l	Olex	HO			X			
Triumph Seed Co.	660CL	NS/CL				X		X
Triumph Seed Co.	845HO	HO			X		X	
Triumph Seed Co.	R859HOCL	HO/CL			X	X		
Triumph Seed Co.	s672	NS				X		
Triumph Seed Co.	s675	NS			X	X	X	X
Triumph Seed Co.	s678	NS		X	X	X	X	X
Triumph Seed Co.	630CL	NS/CL				X	X	
Triumph Seed Co.	TRXs5423	NS				X		
Triumph Seed Co.	TRXs7322	NS			X	X	X	X
Triumph Seed Co.	s671	NS		X	X	X	X	X
Triumph Seed Co.	s880CL	HO/CL			X	X	X	X
Triumph Seed Co.	s878	HO			X	X	X	X
Triumph Seed Co.	TRX7435HO	HO			X	X		
Triumph Seed Co.	TRXs8325	NS					X	
USDA	USDA 894 (check)	Trad.		X	X	X	X	X
USDA	cms HA412/RHA 377(chk)	Trad.		X			X	
USDA	Hyb. 894 (check)	Trad.		X	X	X	X	X
USDA	cmsHA412/RHA409(chk)	Trad.		X	X	X	X	X
	Total hybrids			42	57	64	63	54

[1]NS = NuSun, HO = High oleic, Trad. = Traditional linoleic, CL = Clearfield, SU = Express-resistant.

[2]CR = Cruiser, CDM = Cruiser DM Pak, CMAX = CruiserMaxx Sunflower.

Table 3. Hybrids tested in the 2008 South Dakota confection hybrid sunflower trials.

Brand	Hybrid	Herb. Resist.	Seed* Treatmnt	Miller	Onida
CHS	07EXP02		Yes	X	X
CHS	08EXP01[1]		Yes	X	X
CHS	Royal Hyb. RH1121		Yes	X	X
Croplan Genetics	CG 135			X	X
Croplan Genetics	CG 139			X	X
Dahlgren & Co.	9530		CR	X	X
Dahlgren & Co.	9531		CR	X	X
Dahlgren & Co.	9592		CR	X	X
Dahlgren & Co.	95EXPCL	CL	CR	X	X
Monsanto	IS 8048		CMAX	X	X
Mycogen Seeds	8C451		CMAX	X	X
Red River Commodities	2215		CDM	X	X
Red River Commodities	2216		CDM	X	X
Red River Commodities	2419		CDM	X	X
Seeds 2000	Jaguar-CL	CL	CMAX	X	X
Seeds 2000	Panther II		CMAX	X	X
SunOpta Sunflower	SS38A		CDM	X	X
Triumph Seed Co.	747C			X	
Triumph Seed Co.	777C			X	
USDA	Hybrid 924 (check)			X	X
			Total	20	18

* CR = Cruiser, CDM = Cruiser DM Pak, CMAX = CruiserMaxx Sunflower.
[1]CHS 08EXP01 was mistakenly entered in the confection trials instead of the oil trials. Performance information for this hybrid is footnoted at the bottom of the Miller oilseed table.

Table 4. Oilseed sunflower hybrid trial, Bison, SD - 2008.

			Seed Yield (lbs/A)				Plant		Harv.	Test	Pop.
					2-yr	Oil	Hght	Lodg	Moist.	Wt.	1000
Brand	Hybrid	Type[1]	2008	2007	Avg.	%	cm	%	%	lb/bu	pl/A
Advanta Pacific LLC	F30008NS,CL	NS/CL	1858	--	--	39.8	156	0.0	15.1	25.7	15.0
Croplan Genetics	CG 306 DMR NS	NS	1868	--	--	42.6	145	1.6	14.0	27.6	11.8
Croplan Genetics	CG 3080 DMR NS	NS	2006	--	--	47.2	136	0.0	10.0	27.5	15.3
Croplan Genetics	CG 325 DMR NS	NS	1448	--	--	42.4	138	0.0	10.2	26.9	11.0
Croplan Genetics	CG 356 NS	NS	1931	--	--	43.1	144	0.0	16.6	28.4	13.7
Croplan Genetics	CG 369 DMR NS	NS	1512	--	--	42.6	156	0.6	15.4	26.6	10.6
Croplan Genetics	CG 378 DMR NS	NS	1878	--	--	41.1	152	0.0	15.3	25.8	10.4
Croplan Genetics	CG 528 CL NS	NS/CL	1912	--	--	42.7	146	0.8	11.5	28.1	13.2
Croplan Genetics	CG 551 CL NS	NS/CL	1317	--	--	40.3	157	0.0	14.5	24.8	12.1
Croplan Genetics	CG 564 CL NS	NS	1531	--	--	41.0	148	7.6	23.2	27.2	11.1
Dekalb	DKF 29-30	NS	1059	1235	1147	43.6	139	0.0	7.1	29.0	12.7
Dekalb	DKF 34-33	NS	1577	850	1213	42.9	136	4.3	13.8	26.8	8.5
Dekalb	DKF 34-80CL	NS/CL	1630	1345	1487	42.6	140	0.0	11.2	26.6	11.8
Dekalb	DKF 37-31	NS	1256	1411	1333	44.7	134	0.0	14.9	28.7	10.0
Dekalb	DKF 38-45	NS	1963	1865	1914	45.5	146	0.0	7.8	28.2	14.4
Dekalb	DKF 3875	Trad.	2012	1679	1845	42.8	145	0.0	13.5	29.7	12.5
Dekalb	DKF 39-80CL	NS/CL	1666	--	--	38.9	169	0.0	14.3	25.4	10.2
Dekalb	IS 7120	HO	1671	1255	1463	43.1	133	0.0	11.7	27.2	12.2
Garst Seed Co.	4651NS	NS	1846	--	--	40.7	161	2.0	15.8	25.9	10.1
Garst Seed Co.	NX43489	NS	1799	--	--	42.2	148	0.0	12.7	29.7	12.5
Garst Seed Co.	NX44166	HO	1790	--	--	43.4	152	1.1	14.6	29.9	10.6
King Seed Inc.	SunKing 4404 NSCL	NS/CL	2246	--	--	37.8	153	0.4	16.3	26.1	15.2
King Seed Inc.	SunKing 4505	Trad.	1754	--	--	44.4	161	0.7	9.9	28.6	10.8
Monsanto	MH6640	NS	1604	--	--	44.0	140	2.1	13.6	29.7	11.0
Monsanto	MH6643	NS	1414	--	--	44.5	143	0.0	11.7	27.6	10.9
Monsanto	MH7632	NS	2008	--	--	43.3	141	0.0	14.9	28.9	14.0
Monsanto	MH7633	NS	1550	--	--	40.5	150	2.9	15.1	28.3	9.2
Mycogen Seeds	8D481	NS	1803	--	--	39.9	146	0.0	13.1	30.5	10.5
Mycogen Seeds	8H449DM	HO	2129	1273	1701	45.6	142	3.0	20.2	27.7	12.7
Mycogen Seeds	8N187	NS	1811	--	--	39.3	119	0.7	17.9	27.0	12.1
Mycogen Seeds	8N270	NS	1722	1454	1588	40.8	123	0.0	11.4	27.9	13.7
Mycogen Seeds	8N358CL	NS/CL	1881	666	1273	43.7	141	0.0	15.6	27.2	13.5
Mycogen Seeds	8N453DM	NS	1766	1815	1790	46.9	137	0.0	18.9	27.4	13.4
Mycogen Seeds	8N510	NS	1587	1630	1609	41.2	140	0.0	17.6	27.3	11.6
Pannar	Pan 7813	NS	1844	2008	1926	41.2	146	0.9	21.0	27.6	10.7
Pannar	Pan 7924	NS	1820	1704	1762	38.7	159	4.1	23.8	24.9	10.5
Pannar	Pan 7986	NS	1911	--	--	40.2	154	0.5	15.0	28.5	15.1
Pannar	Pan 9501	Trad.	1680	1525	1602	38.4	158	1.2	14.0	27.5	14.8
Triumph Seed Co.	s678	NS	1783	1650	1717	42.7	140	0.0	21.4	26.3	14.7
Triumph Seed Co.	s671	NS	1978	--	--	43.5	118	0.0	21.2	26.7	15.9
USDA	USDA 894 (check)	Trad.	1094	867	980	44.0	141	0.0	16.7	26.8	10.9
USDA	cms HA412/RHA 377(chk)	Trad.	1610	--	--	48.2	145	2.1	12.7	27.7	12.8
Grand Mean			1727	1385	1550	42.4	145	0.9	14.9	27.5	12.2
LSD 5%			484	574	395	1.7	12	ns	3.4	2.3	ns
C.V.			20.0	20.4	19.9	2.9	6.1	298	16.3	5.9	25.6

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 16, 2008.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 5. Oilseed sunflower hybrid trial, Miller, SD - 2008.

			Seed Yield (lbs/A)				Plant		Harv.	Test	Pop.
					2-yr	Oil	Hght	Lodg	Moist.	Wt.	1000
Brand	Hybrid	Type[1]	2008	2007	Avg.	%	cm	%	%	lb/bu	pl/A
Advanta Pacific LLC	F30008NS,CL	NS/CL	1859	--	--	45.9	184	3.3	13.0	30.9	17.4
Advanta Pacific LLC	F30294NS,Rust	NS	1904	--	--	46.6	169	2.1	14.2	31.1	17.4
Advanta Pacific LLC	F51132NS,CL	NS/CL	1796	--	--	48.2	171	2.9	13.3	30.5	17.4
Advanta Pacific LLC	F51137NS,CL	NS/CL	1587	--	--	47.4	160	0.8	13.5	31.0	17.4
Advanta Pacific LLC	F51139NS,DM,CL	NS/CL	1766	--	--	47.0	170	0.4	13.1	32.1	17.4
Croplan Genetics	CG 306 DMR NS	NS	1826	--	--	47.8	166	0.0	12.7	31.8	17.4
Croplan Genetics	CG 3080 DMR NS	NS	2028	--	--	49.8	164	2.1	12.5	30.9	17.4
Croplan Genetics	CG 325 DMR NS	NS	2041	--	--	48.3	173	0.8	13.1	31.4	17.4
Croplan Genetics	CG 356 NS	NS	2584	--	--	47.3	164	2.5	15.3	33.3	17.4
Croplan Genetics	CG 369 DMR NS	NS	2349	--	--	47.8	181	3.3	14.6	30.9	17.4
Croplan Genetics	CG 378 DMR NS	NS	2108	--	--	47.1	185	7.5	14.1	32.0	17.4
Croplan Genetics	CG 528 CL NS	NS/CL	1929	--	--	47.2	172	1.4	12.1	32.6	17.0
Croplan Genetics	CG 551 CL NS	NS/CL	2069	--	--	48.1	183	0.0	13.9	29.9	17.4
Croplan Genetics	CG 564 CL NS	NS	1948	--	--	49.2	182	1.7	14.3	32.2	17.4
Dahlgren & Co.	4421	NS	1937	2024	1981	45.4	173	2.9	12.5	30.4	17.4
Dahlgren & Co.	4455	NS	2060	1884	1972	46.2	173	3.3	12.5	31.5	17.4
Dahlgren & Co.	4370NS	NS	1895	--	--	47.2	163	0.5	12.9	32.2	17.0
Dahlgren & Co.	4500CL	NS/CL	2051	--	--	47.6	174	2.1	12.9	31.4	17.4
Dekalb	DKF 29-30	NS	2033	1234	1633	48.2	165	1.3	12.3	31.7	17.0
Dekalb	DKF 34-33	NS	2339	1190	1764	49.5	168	0.8	13.3	33.1	17.4
Dekalb	DKF 34-80CL	NS/CL	1534	1142	1338	48.1	168	3.5	12.8	32.7	16.7
Dekalb	DKF 37-31	NS	2346	2200	2273	48.9	168	2.1	13.9	32.9	17.4
Dekalb	DKF 38-45	NS	2460	1758	2109	49.2	174	2.1	13.5	31.8	17.4
Dekalb	DKF 3875	Trad.	2650	1841	2246	49.3	171	1.7	13.6	33.0	16.8
Dekalb	DKF 39-80CL	NS/CL	1646	--	--	45.8	186	5.8	12.8	31.4	17.4
Dekalb	IS 7120	HO	1615	2164	1890	47.6	158	1.9	12.8	31.3	17.0
King Seed Inc.	SunKing 4404 NSCL	NS/CL	2126	2272	2199	47.0	180	6.7	13.7	31.0	17.4
King Seed Inc.	SunKing 4505	Trad.	1833	1670	1751	48.7	184	1.7	12.2	31.2	17.4
Legend Seeds	LSF 318NCL	NS/CL	1551	--	--	46.0	160	1.3	12.6	32.4	17.4
Monsanto	MH6640	NS	2494	--	--	50.0	162	0.0	14.0	32.2	17.4
Monsanto	MH6643	NS	1881	--	--	48.3	167	2.9	13.0	31.6	17.4
Monsanto	MH7632	NS	2699	--	--	48.7	172	0.0	13.7	32.3	17.4
Monsanto	MH7633	NS	2483	--	--	47.2	172	2.5	13.1	31.8	17.4
Mycogen Seeds	8D481	NS	1981	--	--	45.7	172	2.9	13.0	31.2	17.4
Mycogen Seeds	8H449DM	HO	2556	2030	2293	50.5	182	2.9	15.6	32.4	17.4
Mycogen Seeds	8N187	NS	1424	--	--	45.8	162	4.2	12.7	30.5	17.4
Mycogen Seeds	8N270	NS	1779	--	--	48.2	157	0.4	12.9	31.3	17.4
Mycogen Seeds	8N358CL	NS/CL	1866	1869	1868	48.9	170	1.7	13.8	31.4	17.4
Mycogen Seeds	8N453DM	NS	2176	1855	2015	50.5	180	3.3	14.2	31.9	17.4
Mycogen Seeds	8N510	NS	2117	2205	2161	46.8	166	2.9	13.6	31.3	17.4
Pannar	Pan 7813	NS	2403	2686	2544	47.8	171	2.2	15.3	32.6	16.8
Pannar	Pan 7924	NS	2302	2217	2259	46.3	168	3.8	15.1	30.8	17.4
Pannar	Pan 7986	NS	1916	--	--	46.2	175	2.9	13.8	31.3	17.4
Pannar	Pan 9501	Trad.	1937	2027	1982	47.6	178	2.1	14.2	31.4	17.4
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1725	--	--	48.8	180	2.1	12.6	31.1	17.4
Pioneer Hi-Bred	Pioneer Brand 63N82	NS/SU	2194	--	--	48.0	164	0.4	14.1	32.6	17.2
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	1717	--	--	47.0	193	3.3	14.2	32.6	17.4
Seeds 2000	Barracuda CL-NS	NS/CL	1910	1337	1623	46.6	176	0.8	15.4	31.3	17.4
Seeds 2000	Blazer CL-NS	NS/CL	2059	1994	2027	48.3	189	4.2	15.7	30.4	17.4

Table 5 (continued).

Brand	Hybrid	Type1	Seed Yield (lbs/A) 2008	2007	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Seeds 2000	Firebird-Expsun-NS	NS/SU	2342	2265	2303	47.3	166	1.7	16.3	31.6	17.4
Seeds 2000	Sierra HO	HO	2028	2076	2052	46.4	178	2.1	13.5	29.2	17.4
Triumph Seed Co.	660CL	NS/CL	2195	2215	2205	47.8	175	1.7	14.8	31.8	17.4
Triumph Seed Co.	R859HOCL	HO/CL	2511	2089	2300	47.0	184	1.3	14.1	31.4	17.4
Triumph Seed Co.	s672	NS	2523	--	--	49.6	113	0.0	16.0	31.2	17.4
Triumph Seed Co.	s675	NS	2672	2323	2498	49.4	102	0.0	16.5	30.8	17.4
Triumph Seed Co.	s678	NS	2439	2443	2441	48.8	144	0.0	15.9	32.4	17.4
Triumph Seed Co.	630CL	NS/CL	1741	--	--	47.7	172	5.4	12.7	30.4	17.4
Triumph Seed Co.	TRXs5423	NS	1789	2343	2066	49.4	104	0.0	13.6	31.2	17.4
Triumph Seed Co.	TRXs7322	NS	2026	--	--	49.8	117	0.0	15.3	31.1	17.4
Triumph Seed Co.	s671	NS	2080	2345	2213	48.9	136	0.0	15.5	31.4	17.4
Triumph Seed Co.	s880CL	HO/CL	2280	2714	2497	48.0	98	0.4	14.0	31.0	17.4
Triumph Seed Co.	s878	HO	2372	2059	2215	48.9	149	0.8	16.3	32.4	17.4
Triumph Seed Co.	TRX7435HO	HO	1981	--	--	49.4	175	1.7	13.6	30.2	17.4
USDA	USDA 894 (check)	Trad.	1489	1606	1548	51.3	154	2.7	13.2	31.8	16.3
(CHS	08EXP01**		1543	--	--	39.8	181	5	--	24.0	16.5)
Grand Mean			2062	1879	2062	48.0	166	2.0	13.8	31.5	17.3
LSD 5%			402	502	317	1.2	9	3.5	0.9	1.4	0.5
C.V.			14.0	16.6	14.6	1.8	3.7	124.2	4.6	3.1	2.1

**CHS 08EXP01 was mistakenly entered into the confection trial. The data presented are from that trial and are not included in the oilseed trial statistics.

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.

Planted June 10, 2008. Harvested October 31, 2008.

Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 6. Oilseed sunflower hybrid trial, Eureka, SD - 2008.

			Seed Yield (lbs/A)				Plant		Harv.	Test	Pop.
					2-yr	Oil	Hght	Lodg	Moist.	Wt.	1000
Brand	Hybrid	Type[1]	2008	2007	Avg.	%	cm	%	%	lb/bu	pl/A
Advanta Pacific LLC	F30294NS,Rust	NS	1648	--	--	44.6	181	4	17.8	30.7	17.4
Advanta Pacific LLC	F51137NS,CL	NS/CL	1598	--	--	45.9	175	0	16.6	32.8	17.4
Advanta Pacific LLC	F51139NS,DM,CL	NS/CL	1519	--	--	45.5	185	4	17.0	31.7	17.4
Croplan Genetics	CG 306 DMR NS	NS	2103	--	--	46.9	177	2	16.6	30.2	17.4
Croplan Genetics	CG 3080 DMR NS	NS	1832	--	--	47.2	177	6	16.3	30.7	17.4
Croplan Genetics	CG 325 DMR NS	NS	2261	--	--	46.4	175	3	17.8	30.6	17.4
Croplan Genetics	CG 356 NS	NS	2672	--	--	45.5	176	3	17.6	32.4	17.4
Croplan Genetics	CG 369 DMR NS	NS	2036	--	--	46.0	185	5	16.7	31.1	17.4
Croplan Genetics	CG 378 DMR NS	NS	1838	--	--	45.0	181	7	17.8	30.4	17.4
Croplan Genetics	CG 528 CL NS	NS/CL	1526	--	--	44.8	179	3	16.4	32.5	17.4
Croplan Genetics	CG 551 CL NS	NS/CL	1791	--	--	45.8	194	2	17.2	30.9	17.4
Croplan Genetics	CG 564 CL NS	NS	1912	--	--	47.0	181	2	17.5	31.0	17.4
Dekalb	DKF 29-30	NS	1897	1941	1919	46.4	181	4	15.9	32.4	17.4
Dekalb	DKF 34-33	NS	2136	2277	2207	46.8	185	5	16.3	32.3	17.4
Dekalb	DKF 34-80CL	NS/CL	1786	1764	1775	45.2	177	3	17.0	31.8	17.4
Dekalb	DKF 37-31	NS	2426	2138	2282	45.2	170	2	17.0	31.5	17.4
Dekalb	DKF 38-45	NS	2404	2577	2490	47.5	170	3	16.6	33.3	17.0
Dekalb	DKF 3875	Trad.	2084	2365	2225	47.4	178	5	16.3	31.2	16.3
Dekalb	DKF 39-80CL	NS/CL	1881	--	--	44.5	197	7	16.4	31.6	17.4
Dekalb	IS 7120	HO	1876	2254	2065	47.9	172	3	17.5	31.4	17.4
Garst Seed Co.	4651NS	NS	1830	--	--	44.4	190	8	17.5	29.8	17.4
Garst Seed Co.	NX43489	NS	1754	--	--	45.2	185	11	17.2	31.5	16.5
Garst Seed Co.	NX44166	HO	1869	--	--	45.6	177	7	17.0	32.7	17.4
King Seed Inc.	SunKing 4404 NSCL	NS/CL	2149	2082	2116	44.2	187	6	17.4	30.1	16.8
King Seed Inc.	SunKing 4505	Trad.	1821	1758	1790	47.3	202	5	16.7	30.4	17.4
Legend Seeds	LSF 318NCL	NS/CL	1544	--	--	44.6	165	3	16.2	31.5	17.4
Monsanto	MH6640	NS	2353	--	--	45.8	172	5	17.1	32.7	17.4
Monsanto	MH6643	NS	1767	--	--	46.0	170	5	17.4	30.9	17.4
Monsanto	MH7632	NS	2486	--	--	45.7	173	2	17.5	32.7	17.4
Monsanto	MH7633	NS	2268	--	--	46.4	183	6	16.3	31.8	17.4
Mycogen Seeds	8D481	NS	2344	--	--	44.0	184	4	16.7	31.4	17.4
Mycogen Seeds	8H449DM	HO	2086	2565	2326	46.9	191	6	17.4	31.4	17.4
Mycogen Seeds	8N187	NS	1784	--	--	45.5	169	4	16.4	31.4	17.4
Mycogen Seeds	8N270	NS	2030	2143	2087	45.9	167	2	16.4	30.9	17.4
Mycogen Seeds	8N358CL	NS/CL	2054	2544	2299	46.2	182	4	17.1	30.7	17.4
Mycogen Seeds	8N453DM	NS	2371	2055	2213	47.1	186	4	17.3	32.3	17.4
Mycogen Seeds	8N510	NS	2210	2942	2576	44.9	176	2	17.4	29.6	17.4
Pannar	Pan 7813	NS	2032	2340	2186	45.1	178	3	18.2	30.9	17.4
Pannar	Pan 7924	NS	1790	2381	2085	45.1	186	12	17.7	31.0	17.4
Pannar	Pan 7986	NS	2221	--	--	43.6	186	9	18.2	32.8	17.0
Pannar	Pan 9501	Trad.	1795	2518	2157	43.8	199	8	17.1	33.3	17.4
Technology Crops Int'l	Olimax	HO	1722	--	--	46.7	189	5	16.7	29.6	17.4
Technology Crops Int'l	Olex	HO	1340	--	--	44.9	188	9	17.1	30.2	17.4
Seeds 2000	Barracuda CL-NS	NS/CL	1928	2170	2049	45.3	185	1	18.3	32.0	17.4
Seeds 2000	Blazer CL-NS	NS/CL	1947	1985	1966	45.5	193	14	17.9	30.6	17.4
Seeds 2000	Firebird-Expsun-NS	NS/SU	2276	2750	2513	44.6	169	0	18.1	30.5	17.4
Seeds 2000	Sierra HO	HO	1808	2215	2011	44.9	178	17	16.2	29.9	17.4
Triumph Seed Co.	845HO	HO	2053	--	--	46.2	182	7	17.9	29.8	17.4

Table 6 (continued).

Brand	Hybrid	Type[1]	Seed Yield (lbs/A) 2008	2007	2-yr Avg.	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Triumph Seed Co.	R859HOCL	HO/CL	1942	--	--	45.3	185	3	17.1	31.1	17.4
Triumph Seed Co.	s675	NS	1948	2186	2067	47.1	100	0	17.4	29.9	17.4
Triumph Seed Co.	s678	NS	2279	2047	2163	48.0	139	2	17.0	32.1	17.4
Triumph Seed Co.	TRXs7322	NS	2256	--	--	46.2	100	0	17.2	31.4	17.4
Triumph Seed Co.	s671	NS	2185	--	--	47.3	124	0	17.2	31.0	17.4
Triumph Seed Co.	s880CL	HO/CL	2332	2132	2232	46.3	104	0	18.1	29.8	17.4
Triumph Seed Co.	s878	HO	2297	--	--	46.3	150	2	17.5	30.9	17.4
Triumph Seed Co.	TRX7435HO	HO	2027	--	--	46.3	184	5	17.5	29.8	17.4
USDA	USDA 894 (check)	Trad.	1654	1638	1646	48.4	156	5	15.9	31.7	17.4
Grand Mean			2003	2065	2146	45.9	170	4	17.1	31.2	17.3
LSD 5%			358	416	273	1.6	10	6	0.8	1.4	ns
C.V.			12.8	14.4	13.4	2.5	4.0	100	3.3	3.1	3.6

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Replanted on June 17, 2008 after being hailed out. Harvested Novenber 24, 2008.
Yield and oil % are reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 7. Oilseed sunflower hybrid trial, Onida, SD - 2008.

Brand	Hybrid	Type[1]	Seed Yield lbs/A	Oil %	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A	Hulling Quality
Advanta Pacific LLC	F30008NS,CL	NS/CL	1831	41.9	65	113	177	14.6	13.0	29.8	17.4	
Advanta Pacific LLC	F51137NS,CL	NS/CL	1495	42.9	64	106	157	2.1	11.9	29.8	17.4	
Advanta Pacific LLC	F51139NS,DM,CL	NS/CL	1625	45.1	63	106	168	2.1	12.7	29.8	17.4	
Croplan Genetics	CG 306 DMR NS	NS	1809	45.2	61	105	152	0.4	12.9	29.5	17.4	
Croplan Genetics	CG 3080 DMR NS	NS	1603	46.2	60	106	158	2.9	12.5	30.0	17.4	
Croplan Genetics	CG 325 DMR NS	NS	1845	44.7	62	101	171	1.3	12.3	29.3	17.4	
Croplan Genetics	CG 356 NS	NS	2176	44.7	63	104	161	2.1	13.7	30.3	17.4	
Croplan Genetics	CG 369 DMR NS	NS	1859	45.6	64	106	167	2.1	12.3	29.7	17.4	
Croplan Genetics	CG 378 DMR NS	NS	1400	44.4	63	99	178	10.4	13.3	28.8	17.4	
Croplan Genetics	CG 528 CL NS	NS/CL	1409	43.8	60	104	172	2.5	12.1	29.9	17.4	
Croplan Genetics	CG 551 CL NS	NS/CL	1510	44.2	64	103	170	2.1	12.9	29.6	17.4	
Croplan Genetics	CG 564 CL NS	NS	1706	45.3	66	107	172	0.8	13.2	30.3	17.4	
Dahlgren & Co.	4421	NS	1722	42.1	61	97	168	1.3	12.3	28.8	17.4	
Dahlgren & Co.	4455	NS	1991	42.0	64	102	165	2.1	13.0	29.4	17.4	
Dahlgren & Co.	4370NS	NS	1737	44.3	59	97	153	3.0	11.2	29.8	16.5	
Dahlgren & Co.	4500CL	NS/CL	1674	45.9	64	101	167	2.9	12.2	30.2	17.4	
Dekalb	DKF 29-30	NS	1684	44.9	60	95	165	1.3	12.2	30.3	17.4	
Dekalb	DKF 34-33	NS	1718	45.8	63	97	163	4.4	12.7	30.5	16.1	
Dekalb	DKF 34-80CL	NS/CL	1910	45.5	62	97	167	0.0	12.3	29.7	17.4	
Dekalb	DKF 37-31	NS	2002	43.7	63	101	167	1.3	12.9	29.6	17.4	
Dekalb	DKF 38-45	NS	1916	44.9	63	102	168	2.1	12.0	29.1	17.4	
Dekalb	DKF 3875	Trad.	2020	47.0	64	104	167	9.2	13.0	29.8	17.4	
Dekalb	DKF 39-80CL	NS/CL	1216	42.2	64	105	186	25.0	12.8	29.3	13.9	Excel
Dekalb	IS 7120	HO	1722	45.4	61	106	150	0.4	12.6	29.7	17.4	
Garst Seed Co.	4651NS	NS	1291	45.3	63	104	177	9.6	13.2	28.9	16.3	
Garst Seed Co.	NX43489	NS	1359	45.3	64	104	169	10.5	13.3	29.6	15.9	
Garst Seed Co.	NX44166	HO	1861	44.5	63	106	174	2.9	12.5	30.9	17.4	
King Seed Inc.	SunKing 4404 NSCL	NS/CL	1554	43.4	65	104	180	18.3	12.8	30.8	16.5	
King Seed Inc.	SunKing 4505	Trad.	1606	47.4	66	99	176	2.1	12.0	29.8	17.4	Excel
Legend Seeds	LSF 318NCL	NS/CL	1483	43.7	61	99	148	5.0	11.3	29.8	17.4	Excel
Monsanto	MH6640	NS	1617	45.3	62	107	159	2.5	12.8	30.5	17.4	
Monsanto	MH6643	NS	1611	44.2	61	104	157	0.7	13.2	28.9	15.7	
Monsanto	MH7632	NS	1907	45.8	65	104	164	0.4	13.5	31.2	17.4	
Monsanto	MH7633	NS	1853	45.3	65	112	170	30.0	12.4	30.8	17.4	
Mycogen Seeds	8D481	NS	2091	42.8	65	95	174	1.3	13.7	29.7	17.4	Excel
Mycogen Seeds	8H449DM	HO	1967	46.8	65	104	170	2.1	13.2	30.5	16.3	
Mycogen Seeds	8N187	NS	1619	44.1	62	104	151	1.3	12.4	29.6	17.4	Good
Mycogen Seeds	8N270	NS	1572	43.4	58	102	148	4.6	11.5	29.9	17.4	Good
Mycogen Seeds	8N358CL	NS/CL	1631	45.3	63	97	165	3.8	13.3	29.0	17.4	
Mycogen Seeds	8N453DM	NS	1973	48.3	63	104	167	1.3	13.4	31.3	17.4	
Mycogen Seeds	8N510	NS	2075	45.3	64	103	171	6.7	13.0	30.0	17.4	Excel
Pannar	Pan 7813	NS	1665	44.8	64	112	150	0.8	13.7	30.0	17.4	
Pannar	Pan 7924	NS	2113	44.7	64	106	167	5.8	13.8	29.3	17.4	
Pannar	Pan 7986	NS	1955	42.3	65	115	169	0.8	13.4	30.3	17.4	
Pannar	Pan 9501	Trad.	1609	42.9	66	110	171	7.9	12.8	29.6	17.4	
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1524	46.1	60	99	176	4.2	12.7	30.4	17.4	
Pioneer Hi-Bred	Pioneer Brand 63N82	NS/SU	1793	44.1	62	99	161	0.0	13.1	29.6	17.4	Excel
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	1653	42.8	64	99	170	5.4	12.9	30.9	17.4	

Table 7 (continued).

Brand	Hybrid	Type[1]	Seed Yield lbs/A	Oil %	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A	Hulling Quality
Seeds 2000	Barracuda CL-NS	NS/CL	1972	45.3	66	104	169	1.7	13.7	30.6	17.4	
Seeds 2000	Blazer CL-NS	NS/CL	1701	44.3	67	102	175	6.3	13.6	30.9	17.4	
Seeds 2000	Firebird-Expsun-NS	NS/SU	2072	43.7	67	104	160	0.8	13.4	28.6	17.4	
Seeds 2000	Sierra HO	HO	1588	43.2	68	115	165	1.3	13.1	27.9	17.4	
Triumph Seed Co.	845HO	HO	2163	46.2	64	104	160	1.3	13.4	29.0	17.4	
Triumph Seed Co.	s675	NS	1956	46.3	68	105	113	0.0	13.7	29.9	17.4	
Triumph Seed Co.	s678	NS	1985	46.1	67	115	141	1.3	13.5	29.6	17.4	
Triumph Seed Co.	630CL	NS/CL	1796	43.3	64	102	170	7.5	12.8	29.2	17.4	
Triumph Seed Co.	TRXs7322	NS	2101	46.2	66	113	116	0.0	12.7	30.3	17.4	
Triumph Seed Co.	s671	NS	1711	45.6	66	111	136	0.4	13.4	29.8	17.4	
Triumph Seed Co.	s880CL	HO/CL	1663	44.9	68	111	102	0.0	13.2	28.3	17.4	
Triumph Seed Co.	s878	HO	1758	46.9	66	115	143	2.1	12.1	31.2	17.4	
Triumph Seed Co.	TRXs8325	NS	1721	46.5	66	101	132	1.3	14.0	29.1	17.4	
USDA (check)	USDA 894	Trad.	1693	47.0	62	100	152	2.9	12.0	30.2	17.4	
USDA (check)	cms HA412/RHA 377	Trad.	1397	48.3	60	97	159	12.1	12.5	30.2	17.4	
Grand Mean			1750	44.8	64		161	4.2	12.8	29.8	17.2	
LSD 5%			389	1.4	1		9	8.4	1.0	1.3	1.4	
C.V.			16.0	2.2	1.0		3.9	143.9	5.3	3.1	5.7	

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 12, 2008. Harvested November 2, 2008.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Hulling quality: Excel = >65% of seed passes over a 14/64 screen; Good = >75% of seed passes over a 13/64 screen.

Table 8. Oilseed sunflower hybrid trial, Reliance, SD - 2008.

			Seed Yield (lbs/A)				Plant		Harv.	Test	Pop.
					2-yr	Oil	Hght	Lodg	Moist.	Wt.	1000
Brand	Hybrid	Type[1]	2008	2007	Avg.	%	cm	%	%	lb/bu	pl/A
Advanta Pacific LLC	F30008NS,CL	NS/CL	2180	--	--	45.5	177	3	12.7	30.4	17.4
Croplan Genetics	CG 306 DMR NS	NS	2345	--	--	48.1	154	2	11.2	31.5	17.4
Croplan Genetics	CG 3080 DMR NS	NS	2374	--	--	48.5	156	3	11.3	31.0	17.4
Croplan Genetics	CG 325 DMR NS	NS	2467	--	--	47.0	167	2	11.6	30.6	17.4
Croplan Genetics	CG 356 NS	NS	2731	--	--	47.7	166	1	12.8	32.7	17.4
Croplan Genetics	CG 369 DMR NS	NS	1957	--	--	46.7	170	2	12.1	30.3	17.4
Croplan Genetics	CG 378 DMR NS	NS	2111	--	--	47.7	167	5	12.9	31.7	17.4
Croplan Genetics	CG 528 CL NS	NS/CL	1909	--	--	46.8	166	1	11.5	31.7	17.4
Croplan Genetics	CG 551 CL NS	NS/CL	2232	--	--	45.7	171	1	12.2	30.8	17.4
Croplan Genetics	CG 564 CL NS	NS	1981	--	--	47.3	171	0	12.8	32.9	17.4
Dekalb	DKF 29-30	NS	2034	1738	1885.855	48.4	166	3	11.5	32.4	17.4
Dekalb	DKF 34-33	NS	2504	1413	1958.78	48.9	166	3	12.0	32.1	17.4
Dekalb	DKF 34-80CL	NS/CL	2426	1716	2070.9	46.7	163	3	11.9	31.3	17.4
Dekalb	DKF 37-31	NS	3080	1899	2489.31	47.6	166	4	11.6	32.4	16.3
Dekalb	DKF 38-45	NS	2614	2117	2365.205	47.9	156	2	11.8	30.7	17.4
Dekalb	DKF 3875	Trad.	2927	2334	2630.79	48.0	173	6	12.3	31.3	16.3
Dekalb	DKF 39-80CL	NS/CL	2274	--	--	46.8	195	3	12.1	30.7	17.4
Dekalb	IS 7120	HO	2522	1818	2170.26	48.1	148	1	11.6	30.7	17.4
Garst Seed Co.	4651NS	NS	2104	--	--	47.5	163	3	12.9	30.7	14.2
Garst Seed Co.	NX43489	NS	2224	--	--	46.5	168	8	12.1	32.9	17.4
Garst Seed Co.	NX44166	HO	2371	--	--	47.3	177	3	12.0	33.1	17.4
King Seed Inc.	SunKing 4404 NSCL	NS/CL	2386	2257	2321.295	46.0	175	1	11.8	31.0	17.4
King Seed Inc.	SunKing 4505	Trad.	2034	1890	1961.985	48.8	178	5	11.8	32.1	17.4
Legend Seeds	LSF 318NCL	NS/CL	2175	--	--	46.5	151	4	11.4	30.1	17.4
Monsanto	MH6640	NS	2695	--	--	48.1	166	3	12.6	32.4	17.4
Monsanto	MH6643	NS	2384	--	--	47.5	161	1	12.5	31.7	17.4
Monsanto	MH7632	NS	2827	--	--	49.1	160	3	12.3	32.3	17.4
Monsanto	MH7633	NS	2402	--	--	46.8	179	3	12.0	31.4	17.4
Mycogen Seeds	8D481	NS	2502	--	--	45.4	164	0	12.1	31.0	17.4
Mycogen Seeds	8H449DM	HO	2224	1811	2017.53	48.7	175	2	13.1	31.5	17.4
Mycogen Seeds	8N187	NS	2374	--	--	46.6	154	1	11.6	30.8	17.4
Mycogen Seeds	8N270	NS	1891	--	--	46.0	141	0	12.0	31.8	16.3
Mycogen Seeds	8N358CL	NS/CL	2194	2005	2099.48	48.3	165	2	10.6	30.9	17.4
Mycogen Seeds	8N453DM	NS	2562	1962	2262.135	49.4	169	3	13.1	32.3	17.4
Mycogen Seeds	8N510	NS	2887	2315	2600.575	46.8	165	2	12.1	30.9	16.3
Pannar	Pan 7813	NS	2443	2080	2261.3	47.6	160	2	13.2	31.6	17.4
Pannar	Pan 7924	NS	2535	1952	2243.805	46.4	172	0	12.6	31.4	17.4
Pannar	Pan 7986	NS	2481	--	--	45.1	174	1	13.3	32.3	16.3
Pannar	Pan 9501	Trad.	1989	1753	1870.93	45.0	183	1	12.2	31.5	17.4
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	2197	--	--	48.3	177	3	12.2	32.8	17.4
Pioneer Hi-Bred	Pioneer Brand 63N82	NS/SU	2575	--	--	46.4	164	3	12.8	31.9	17.4
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	2258	--	--	46.3	176	1	13.8	32.2	17.4
Seeds 2000	Barracuda CL-NS	NS/CL	2093	1832	1962.345	47.5	166	1	13.4	32.8	17.4
Seeds 2000	Blazer CL-NS	NS/CL	1912	2109	2010.64	47.1	179	4	12.8	30.5	17.4
Seeds 2000	Firebird-Expsun-NS	NS/SU	2545	2026	2285.43	47.1	153	0	13.8	29.9	17.4
Seeds 2000	Sierra HO	HO	2434	1992	2213	45.8	170	7	11.9	30.4	17.4
Triumph Seed Co.	660CL	NS/CL	2108	1750	1929.06	47.2	164	2	13.0	31.9	17.4
Triumph Seed Co.	s675	NS	2642	1537	2089.515	49.3	115	0	14.0	31.8	17.4
Triumph Seed Co.	s678	NS	2585	1777	2181.04	49.0	134	0	14.2	32.1	17.4
Triumph Seed Co.	TRXs7322	NS	3091	--	--	48.0	102	0	13.1	32.5	17.4
Triumph Seed Co.	s671	NS	2640	--	--	48.3	128	0	14.0	31.5	17.4
Triumph Seed Co.	s880CL	HO/CL	2958	1922	2439.79	47.9	94	0	12.9	30.5	17.4
Triumph Seed Co.	s878	HO	2594	1996	2295.21	48.3	133	0	13.9	32.1	17.4
USDA	USDA 894 (check)	Trad.	1722	1997	1859.395	47.7	141	2	12.4	31.0	15.5
Grand Mean			2383	1847	2172	47.4	161	2	12.4	31.5	17.2
LSD 5%			388	361	264	1.5	9	3	0.8	1.2	1.1
C.V.			11.7	14.0	12.0	2.2	4.2	109.9	4.7	2.7	4.5

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.
Planted June 11, 2008. Harvested Oct. 30, 2008.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 9. Oilseed sunflower hybrid trial averaged over 5 South Dakota locations - 2008.

Brand	Hybrid	Type[1]	Seed Yield lbs/A	Oil %	Plant Hght cm	Lodg %	Harv. Moist. %	Test Wt. lb/bu	Pop. 1000 pl/A
Croplan Genetics	CG 306 DMR NS	NS	1990	46.1	159	1	13.5	30.1	16.3
Croplan Genetics	CG 3080 DMR NS	NS	1969	47.8	158	3	12.5	30.0	17.0
Croplan Genetics	CG 325 DMR NS	NS	2012	45.8	165	1	13.0	29.8	16.1
Croplan Genetics	CG 356 NS	NS	2419	45.7	162	2	15.2	31.4	16.7
Croplan Genetics	CG 369 DMR NS	NS	1942	45.8	172	3	14.2	29.7	16.0
Croplan Genetics	CG 378 DMR NS	NS	1867	45.1	173	6	14.7	29.7	16.0
Croplan Genetics	CG 528 CL NS	NS/CL	1737	45.0	167	2	12.7	30.9	16.5
Croplan Genetics	CG 551 CL NS	NS/CL	1784	44.8	175	1	14.2	29.2	16.4
Croplan Genetics	CG 564 CL NS	NS	1815	46.0	171	2	16.2	30.7	16.1
Dekalb	DKF 29-30	NS	1741	46.3	163	2	11.8	31.2	16.4
Dekalb	DKF 34-33	NS	2055	46.8	163	3	13.6	30.9	15.4
Dekalb	DKF 34-80CL	NS/CL	1857	45.6	163	2	13.1	30.4	16.1
Dekalb	DKF 37-31	NS	2222	46.0	161	2	14.0	31.0	15.7
Dekalb	DKF 38-45	NS	2271	47.0	163	2	12.3	30.6	16.7
Dekalb	DKF 3875	Trad.	2339	46.9	167	4	13.8	31.0	15.9
Dekalb	DKF 39-80CL	NS/CL	1737	43.6	187	8	13.7	29.7	15.3
Dekalb	IS 7120	HO	1881	46.4	152	1	13.2	30.0	16.3
King Seed Inc.	SunKing 4404 NSCL	NS/CL	2092	43.7	175	6	14.4	29.8	16.7
King Seed Inc.	SunKing 4505	Trad.	1810	47.3	180	3	12.5	30.4	16.1
Monsanto	MH6640	NS	2153	46.6	160	3	14.0	31.5	16.1
Monsanto	MH6643	NS	1811	46.1	160	2	13.6	30.1	15.8
Monsanto	MH7632	NS	2385	46.5	162	1	14.4	31.5	16.7
Monsanto	MH7633	NS	2111	45.3	171	9	13.8	30.8	15.8
Mycogen Seeds	8D481	NS	2144	43.6	168	2	13.7	30.7	16.0
Mycogen Seeds	8H449DM	HO	2192	47.7	172	3	15.9	30.7	16.3
Mycogen Seeds	8N187	NS	1803	44.3	151	2	14.2	29.8	16.4
Mycogen Seeds	8N270	NS	1799	44.9	147	1	12.8	30.4	16.5
Mycogen Seeds	8N358CL	NS/CL	1925	46.5	165	2	14.1	29.8	16.6
Mycogen Seeds	8N453DM	NS	2170	48.4	168	2	15.4	31.0	16.6
Mycogen Seeds	8N510	NS	2175	45.0	164	3	14.8	29.8	16.0
Pannar	Pan 7813	NS	2077	45.3	161	2	16.3	30.5	15.9
Pannar	Pan 7924	NS	2112	44.3	170	5	16.6	29.5	16.0
Pannar	Pan 7986	NS	2096	43.5	171	3	14.7	31.0	16.6
Pannar	Pan 9501	Trad.	1802	43.5	178	4	14.1	30.7	16.9
Triumph Seed Co.	s671	NS	2119	46.7	128	0	16.3	30.1	17.1
Triumph Seed Co.	s678	NS	2214	46.9	140	1	16.4	30.5	16.9
USDA	894 (check)	Trad.	1530	47.7	149	3	14.0	30.3	15.5
Average			2002	45.7	164	3	14.1	30.4	16.3
LSD			181	0.7	4	2	0.8	0.7	1.0
C.V.			14.5	2.3	4.3	143	8.6	3.6	9.3

[1]NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield, DM=downy mildew resistant, SU=Express-resistant.

Table 10. Confection hybrid sunflower trial - Onida, SD 2008.

Brand	Hybrid	Type*	Days to Flwr	Mat.	Plant Hght cm	Lodg %	Pop. 1000 pl/A
CHS	07EXP02	Conf.	64	103	179	4	14.7
CHS	Royal Hyb. RH1121	Conf.	67	104	182	13	17.4
Croplan Genetics	CG 135	Conf.	58	90	165	10	16.3
Croplan Genetics	CG 139	Conf.	60	96	168	4	13.5
Dahlgren & Co.	9530	Conf.	65	104	182	9	17.4
Dahlgren & Co.	9531	Conf.	67	104	184	7	17.4
Dahlgren & Co.	9592	Conf.	66	104	180	3	17.4
Dahlgren & Co.	95EXPCL	Conf/CL	72	108	193	4	17.4
Monsanto	IS 8048	Conf.	61	100	172	1	17.4
Mycogen Seeds	8C451	Conf.	66	101	175	4	17.4
Red River Commodities	2215	Conf.	65	102	191	4	17.4
Red River Commodities	2216	Conf.	67	104	187	8	17.4
Red River Commodities	2419	Conf.	67	106	175	5	17.4
Seeds 2000	Jaguar-CL	Conf/CL	61	101	164	4	16.8
Seeds 2000	Panther II	Conf.	62	102	175	11	17.4
SunOpta Sunflower	SS38A	Conf.	62	94	175	3	17.4
USDA	Hybrid 924 (check)	Conf.	62	98	178	41	15.2
Grand Mean			64		177	9	16.6
LSD 5%			2		9	12	ns
C.V.			1.8		3.8	96.7	12.7

* Conf.=Confection, CL=Clearfield.
Planted June 12, 2008. Not harvested due to excessive seed shatter.

Table 11. Confection hybrid sunflower trial - Miller, SD 2008.

Brand	Hybrid	Type*	Seed Yield (lbs/A) 2008	2007	2-yr	Plant Hght cm	Lodg-ing %	Test Wt. lb/bu	Pop. 1000 pl/A	% Over Screen 22/64	20/64	18/64	Nut-meat %
CHS	07EXP02	Conf.	1251	--	--	194	6	22.2	16.6	45	73	87	49
CHS	Royal Hyb. RH1121	Conf.	1296	1501	1398.545	192	4	24.4	13.5	57	76	88	51
Croplan Genetics	CG 135	Conf.	1266	--	--	174	13	24.0	16.5	48	70	85	52
Croplan Genetics	CG 139	Conf.	1308	--	--	172	7	23.2	14.4	59	79	90	51
Dahlgren & Co.	9530	Conf.	1405	1882	1643.56	193	5	25.3	16.6	52	71	86	49
Dahlgren & Co.	9531	Conf.	1117	--	--	200	4	23.6	17.4	55	77	89	50
Dahlgren & Co.	9592	Conf.	1076	--	--	189	7	23.7	17.0	49	73	86	49
Dahlgren & Co.	95EXPCL	Conf/CL	1602	--	--	209	3	23.2	14.6	63	81	90	41
Monsanto	IS 8048	Conf.	1283	--	--	177	3	26.2	16.5	48	68	82	51
Mycogen Seeds	8C451	Conf.	1214	--	--	192	3	22.2	17.4	52	76	88	50
Red River Commodities	2215	Conf.	1363	1659	1511.15	195	3	25.7	16.3	53	75	88	62
Red River Commodities	2216	Conf.	1136	1779	1457.19	209	2	22.5	17.4	48	74	90	51
Red River Commodities	2419	Conf.	1993	--	--	186	4	23.4	14.8	63	82	90	46
Seeds 2000	Jaguar-CL	Conf/CL	1113	--	--	176	5	23.8	17.4	44	72	88	54
Seeds 2000	Panther II	Conf.	1543	--	--	181	9	24.6	15.9	59	80	91	51
SunOpta Sunflower	SS38A	Conf.	1826	1486	1656.01	178	5	24.9	17.4	42	66	82	56
Triumph Seed Co.	747C	Conf.	1367	--	--	180	8	20.9	14.6	47	75	87	51
Triumph Seed Co.	777C	Conf.	1456	1324	1390.15	200	6	23.9	17.4	48	71	84	48
USDA	Hybrid 924 (check)	Conf.	1048	1305	1176.79	189	13	24.7	16.3	37	56	74	52
Grand Mean			1360	1460	1462	188	6	23.8	16.2	51	73	86	51
LSD 5%			346	381	254	12	ns	ns	ns	ns	10	6	ns
C.V.			18.0	18.4	18.2	4.6	116.3	7.8	13.1	22.3	9.5	5.0	10.7

* Conf.=Confection, CL=Clearfield.
Planted June 10, 2008. Harvested November 1, 2008.

Table 12. Oilseed sunflower fatty acid profiles of selected hybrids - Onida, SD 2008.

Sunflower Brand	Hybrid	Type*	Palmitic (%)	Stearic (%)	Oleic (%)	Linoleic (%)
Dekalb	IS 7120	HO	3.2	3.4	86.5	4.7
Garst Seed Co.	4651NS	NS	4.7	4.2	59.1	29.5
Garst Seed Co.	NX43489	NS	4.7	4.3	54.5	34.2
Garst Seed Co.	NX44166	HO	3.4	3.8	86.2	4.0
Legend Seeds	LSF 318NCL	NS/CL	5.0	4.5	54.0	33.8
Pannar	Pan 7813	NS	4.6	4.3	53.5	35.7
Pannar	Pan 7924	NS	4.7	4.4	48.0	40.8
Pannar	Pan 7986	NS	3.1	5.4	77.6	11.6
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	3.0	3.3	88.8	2.9

* NS=NuSun, HO=High Oleic, Trad.=Traditional linoleic, CL=Clearfield.

EC 909
Revised
Annually

SUNFLOWER

2009 South Dakota Hybrid Performance Trials

Oilseed

Confection

COOPERATIVE EXTENSION SERVICE • SOUTH DAKOTA STATE UNIVERSITY • U.S. DEPARTMENT OF AGRICULTURE

List of Tables

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EC909-09: December 2009

SDSU

SUNFLOWER

2009 South Dakota Hybrid Performance Trials
Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Reliance oilseed test (table 8) could be repeated in 2010 exactly as it was in 2009, the yield ranking of a hybrid that yielded 2,721 lbs/A and one that yielded 2,425 lbs/A might change places, because their yield difference (296 lbs/A) is less than the indicated yield LSD value of 466 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Reliance in 2009. In contrast, a hybrid that yielded 2,215 lbs/A at Reliance in 2009 would likely be lower yielding than one that yielded 2,721 lbs/A if the two hybrids were grown again under similar conditions, because the difference between them in 2009 (2721 – 2215 = 506 lbs/A) exceeded the LSD value of 466 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20–25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew, and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to the aforementioned and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2009 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Eureka, Miller, Onida, and Reliance). Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. Non-oilseed (confection) sunflower trials were conducted at Miller and Onida. Test locations are indicated on the map in figure 1. Trial sites for each of the hybrids tested in 2009 appear in tables 2 and 3.

Climate

A summary of climate conditions near the sunflower test sites is presented in table 1. The 2009 growing season began with below-normal precipitation and temperature in May. It remained drier than usual through June at Miller and Onida, but was wetter than usual at the other sites in June. July brought slightly above normal rainfall to most sites. August was somewhat drier than normal at Bison, Eureka, and Miller, but wetter than normal at Onida and Reliance. September was drier than normal at all locations except Eureka, while October was wetter and much cooler than normal at all locations. Miller had virtually no rain from August 10 until October 1, limiting yield and reducing test weight. Summer temperatures were generally cooler than normal, but September brought above-normal temperatures. The first killing frost (<24°F) occurred on October 9–10 at all locations, which was near normal at Eureka and Reliance, but 4–8 days earlier than normal at Miller, Onida, and Bison.

Experimental Methods

Plots at all locations consisted of four rows 30-feet long, spaced 30-inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62–66).

Seed of most of the hybrids entered in the trials was pre-treated with Cruiser insecticide, and most was also treated with fungicide. Seed treatments used on individual hybrids are listed in tables 2 and 3. All trials were seeded no-till. The previous crop at Eureka and Miller was corn; at Bison, Reliance, and Onida, it was wheat. Plots were over-seeded and thinned to a plant population of approximately 17,400 plants/A (Onida and Bison) or 16,300 plants/A (Miller and Reliance). Thinning was not adequate at Eureka, due to an inexperienced crew, so stand counts were made prior to harvest. Plant population averaged 23,600 plants/A at Eureka. Stands were good everywhere except Reliance. Miller had a low drainage area through the middle of the third replication of the oilseed trial, which reduced stands and stunted plants in that area. The third replication at Miller was therefore excluded from all oilseed statistical analyses; however, the yield data were still too variable for publication.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Days from planting to physiological maturity (rated visually) was also recorded at Onida. Plant height and lodging notes were taken at all locations

immediately before harvest. Lodging was low at all locations except Bison for most hybrids. Bison had considerable lodging in some plots; the lodging appeared to be mainly due to deer/antelope damage. The fourth replication had the most damage and was therefore excluded from yield and lodging analyses, as were any plots in the other three replications with greater than 25% lodging (5 additional plots).

Plots at Onida, Miller, Eureka, and Reliance were harvested with a Gleaner Model K combine fitted with a 2-row all row crop header. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGauge. Seed yields were adjusted to a 10%-moisture basis. Oil content was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a 1-pint seed sample over 14/64 and 13/64 round-hole screens.

A 1-pint sub-sample of seed from each plot of the confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in tables 4 through 12. Yields of oilseed hybrids were highest at Eureka, averaging 2,381 lbs/A over all hybrids tested, with an average oil content of 45.8%. The lowest yield and oil was measured at Bison, which averaged 890 lbs/A and 45.5% oil. Confection seed yield averaged 2,205 lbs/A at Onida and were too variable for publication at Miller. In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

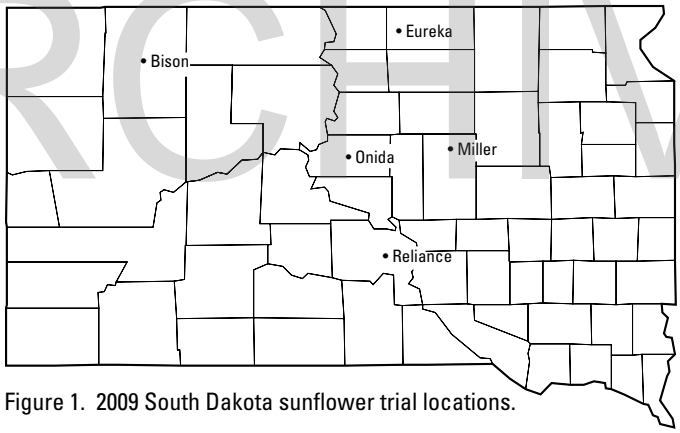

Figure 1. 2009 South Dakota sunflower trial locations.

Table 1. Climate summary for weather stations nearest to 2009 South Dakota sunflower test sites and departures from normal.

Location-Month	2009 Temperature Avg Max. (°F)	Avg Min. (°F)	Mean (°F)	Total Precip (in.)	Departure from Normal^ Max Temp (°F)	Min Temp (°F)	Avg Temp (°F)	Precip (in.)
Bison*								
May	66.3	40.5	53.9	1.43	-3.2	-3.2	-2.7	-1.29
June	71.1	49.1	60.2	3.40	-7.8	-3.9	-5.8	0.58
July	78.8	54.2	66.5	1.77	-7.2	-4.2	-5.7	-0.50
August	79.6	52.7	66.1	1.00	-6.6	-4.2	-5.5	-0.47
September	77.3	49.6	62.7	0.38	2.5	3.1	2.0	-0.82
October	44.6	29.9	36.6	2.02	-15.9	-5.4	-11.3	0.56
Eureka*								
May	69.4	40.8	55.1	1.13	-0.4	-2.8	-1.6	-1.50
June	74.4	50.4	62.4	4.31	-3.8	-2.5	-3.2	1.14
July	79.0	55.0	67.0	3.86	-5.7	-3.0	-4.4	1.08
August	80.2	55.8	68.0	1.71	-3.6	-0.4	-2.0	-0.59
September	75.9	49.3	62.6	1.46	2.6	3.9	3.2	0.03
October	45.3	27.1	36.2	3.54	-13.8	-6.5	-10.2	1.88
Miller*								
May	69.2	41.7	55.4	1.09	0.8	-3.8	-1.6	-2.05
June	74.9	53.2	64.0	2.20	-3.3	-2.1	-2.8	-0.70
July	79.1	56.0	67.5	3.05	-6.0	-4.6	-5.4	0.45
August	79.4	54.8	67.1	1.56	-4.3	-3.0	-3.7	-0.45
September	74.0	51.2	62.6	0.00	-0.1	3.7	1.8	-1.80
October	45.9	31.8	38.9	3.59	-14.8	-3.1	-8.9	1.82
Onida 4 NW*								
May	71.0	41.4	56.2	0.89	0.6	-2.9	-1.2	-1.96
June	76.7	52.0	64.4	2.16	-3.5	-1.6	-2.6	-0.95
July	82.3	55.7	69.0	3.03	-5.3	-3.1	-4.2	0.34
August	81.0	54.5	67.8	3.35	-4.8	-2.5	-3.6	1.21
September	76.7	51.0	63.8	0.23	0.7	4.7	2.6	-1.31
October	47.1	30.6	38.9	3.11	-14.1	-3.9	-9.0	1.53
Reliance*								
May	72.0	44.7	59.0	0.57	1.1	0.0	1.2	-3.05
June	76.5	55.3	66.0	4.99	-4.5	0.9	-1.7	1.59
July	81.7	57.7	70.0	3.11	-7.0	-2.1	-4.3	0.19
August	81.8	57.7	69.7	5.05	-5.8	-0.5	-3.2	2.77
September	75.7	53.1	64.6	0.82	-1.9	5.1	1.8	-1.16
October	49.7	34.1	41.7	2.22	-13.3	-1.4	-7.6	0.46

*Based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.
^Departures from normal were determined by comparing 2009 observations to 30-yr averages (1971–2000) for each site.

Table 2. Oilseed sunflower hybrids tested in South Dakota - 2009.

Brand	Hybrid	Hybrid Type[1]	Seed[2] Treatmnt	Location			
				Bison	Eureka	Onida	Reliance
CHS Sunflower	08EXP01	Trad.	CDM			X	
Croplan Genetics	306 DMR NS	NS,DM	CM	X	X	X	X
Croplan Genetics	3080 DMR NS	NS,DM	CM	X	X	X	X
Croplan Genetics	356A NS	NS	CM	X	X	X	X
Croplan Genetics	369 DMR NS	NS,DM	CM	X	X	X	X
Croplan Genetics	378 DMR NS	NS,DM	CM	X	X	X	X
Croplan Genetics	460 E NS	NS,Ex	CM	X	X	X	X
Croplan Genetics	555 CL DMR NS	NS,CL,DM	CM	X	X	X	X
Dahlgren & Co.	4416CL ConOil	NS,CL	Yes		X	X	
Dahlgren & Co.	4455 Con Oil	NS	Yes		X	X	
King Seed Inc.	SunKing 4404 NSCL	NS,CL	CM	X	X	X	X
King Seed Inc.	SunKing 4444 NS	NS	CM	X	X	X	X
Syngenta	DKF34-33 NS/DM	NS,DM	CM	X	X	X	X
Syngenta	DKF34-80CL	NS,CL	CM	X	X	X	X
Syngenta	DKF37-31 NS	NS	CM	X	X	X	X
Syngenta	DKF37-32 NS	NS	CM	X	X	X	X
Syngenta	DKF38-45 HO	HO	CM	X	X	X	X
Syngenta	DKF38-75 NS	NS	CM	X	X	X	X
Syngenta	DKF39-80CL	NS,CL	CM	X	X	X	X
Syngenta	IS7120 HO/DM	HO,DM	CM	X	X	X	X
Syngenta	MH9001CL	NS,CL	CM	X	X	X	X
Syngenta	MH9002CL	NS,CL	CM	X	X	X	X
Mycogen Seeds	8D310	NS			X	X	X
Mycogen Seeds	8D481	NS			X	X	X
Mycogen Seeds	8H288CLDM	HO,CL			X	X	
Mycogen Seeds	8H449DM	HO,DM		X	X	X	X
Mycogen Seeds	8N187	NS		X	X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM		X	X	X	X
Mycogen Seeds	8N433DM	NS,DM		X	X	X	X
Mycogen Seeds	8N453DM	NS,DM			X	X	X
Mycogen Seeds	8N510	NS		X	X	X	X
Pannar Seed, Inc	PAN7813 NS	NS			X	X	X
Pannar Seed, Inc	PAN7924 NS	NS			X	X	X
Pannar Seed, Inc	PAN8466 NS/CL	NS,CL			X	X	X
Pannar Seed, Inc	PEX7803	HO			X	X	X
Pannar Seed, Inc	PEX7904	HO			X	X	X
Pioneer Hi-Bred	Pioneer Brand 63M91	NS		X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex		X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 64H41	HO		X	X	X	X
Seeds 2000	Badger CL	NS,CL	C/apron		X	X	X
Seeds 2000	Barracuda	NS,CL	C/apron		X	X	X
Seeds 2000	Blazer CL	NS,CL	C/apron		X	X	X
Seeds 2000	Firebird	NS,Ex	C/apron		X	X	X
Seeds 2000	Sierra	HO	C/apron		X	X	X
Triumph Seed Co., Inc	660CL	NS,CL					
Triumph Seed Co., Inc	845HO	HO			X	X	
Triumph Seed Co., Inc	859HOCL	HO,CL					
Triumph Seed Co., Inc	s668 (TRXs8325)	NS,SS				X	X
Triumph Seed Co., Inc	s671	NS,SS		X	X	X	X

Table 2. Oilseed sunflower hybrids tested in South Dakota - 2009. (Continued)

Brand	Hybrid	Hybrid Type[1]	Seed[2] Treatmnt	Location			
				Bison	Eureka	Onida	Reliance
Triumph Seed Co., Inc	s674	NS,SS		X	X	X	X
Triumph Seed Co., Inc	s678	NS,SS		X	X	X	X
Triumph Seed Co., Inc	s878H	HO,SS			X	X	X
Triumph Seed Co., Inc	s655	NS,SS,DM		X	X	X	X
Triumph Seed Co., Inc	TRXs9422	NS,SS		X	X	X	X
Triumph Seed Co., Inc	TRXs9423	NS,SS			X	X	X
Triumph Seed Co., Inc	TRXs9425	NS,SS				X	X
Triumph Seed Co., Inc	s680CL	NS,CL,SS		X	X	X	X
Triumph Seed Co., Inc	TRX 8341	NS					
USDA (check)	894	Trad.		X	X	X	X
USDA (check)	cms HA412/RHA 377	Trad.			X		X

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
[2]C = Cruiser, CDM = Cruiser DM Pak, CM = CruiserMaxx Sunflower.

Table 3. Confection sunflower hybrids tested in South Dakota - 2009.

Brand	Hybrid	Hybrid Type[1]	Seed[2] Treatmnt	Location Miller	Location Onida
CHS Sunflower	RH 1121	Conf.	CDM	X	X
CHS Sunflower	RH 3126RT	Conf.	CDM	X	X
CHS Sunflower	RH 400CL	Conf./CL	CDM	X	X
Croplan Genetics	179	Conf.	C2-MX	X	X
Dahlgren & Co.	9579	Conf.	CM	X	X
Dahlgren & Co.	9592	Conf.	CM	X	X
Dahlgren & Co.	95EXCL	Conf./CL	CM	X	X
Mycogen Seeds	8C451	Conf.		X	X
Red River Commodities	RRC 2215	Conf.	CM	X	X
Red River Commodities	RRC 2216	Conf.	CM	X	X
Red River Commodities	RRC 2217	Conf.	CM	X	X
Seeds 2000	Jaguar	Conf./CL	C/apron	X	X
Seeds 2000	Panther II	Conf.	C/apron	X	X
Seeds 2000	X9681	Conf.	apron	X	X
Triumph Seed Co., Inc	747C	Conf.		X	
Triumph Seed Co., Inc	777C	Conf.		X	
USDA	924 (check)	Conf.		X	X

[1]Type: Conf. = Confection, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
[2]C = Cruiser, CDM = Cruiser DM Pak, CM = CruiserMaxx Sunflower.

Table 4. 2009 - Sunflower - Oilseed - Bison, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed Yield 2009	Seed Yield 2-yr Avg.	Seed Yield 3-yr Avg.	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
			---------(lb/a)---------								
Croplan	306 DMR NS	NS,DM	944	1406	--	45.8	51	6.4	4.4	28.4	16.4
Croplan	3080 DMR NS	NS,DM	1029	1518	--	48.4	51	11.8	6.3	29.7	18.0
Croplan	356A NS	NS	910	--	--	46.0	48	1.6	5.9	28.6	17.8
Croplan	369 DMR NS	NS,DM	817	1164	--	44.8	53	4.4	6.9	27.2	16.0
Croplan	378 DMR NS	NS,DM	999	1438	--	43.6	55	3.4	13.0	29.7	17.6
Croplan	460 E NS	NS,Ex	637	--	--	46.1	52	6.0	9.8	29.0	17.6
Croplan	555 CL DMR NS	NS,CL,DM	710	--	--	46.7	53	5.3	7.4	26.5	17.3
King Seed	SunKing 4404 NSCL	NS,CL	832	1539	--	44.3	48	1.1	7.4	29.4	17.8
King Seed	SunKing 4444 NS	NS	882	--	--	42.1	54	3.3	9.9	29.2	15.3
Syngenta	DKF34-33 NS/DM	NS,DM	667	1122	1031	46.3	48	6.3	5.9	34.2	16.2
Syngenta	DKF34-80CL	NS,CL	614	1122	1196	45.5	49	10.7	5.3	31.0	17.2
Syngenta	DKF37-31 NS	NS	796	1026	1154	45.0	50	9.4	7.6	29.9	16.9
Syngenta	DKF37-32 NS	NS	820	--	--	44.3	47	7.5	7.0	31.3	17.0
Syngenta	DKF38-45 HO	HO	872	1417	1567	47.4	48	2.8	8.3	31.3	16.7
Syngenta	DKF38-75 NS	NS	827	1420	1506	42.9	50	7.2	7.8	28.2	15.7
Syngenta	DKF39-80CL	NS,CL	643	1155	--	45.1	57	5.3	7.7	29.0	15.9
Syngenta	IS7120 HO/DM	HO,DM	1020	1346	1316	44.8	49	5.8	5.5	31.3	17.2
Syngenta	MH9001CL	NS,CL	821	--	--	45.4	52	5.8	11.8	29.3	16.5
Syngenta	MH9002CL	NS,CL	785	--	--	44.6	50	4.0	8.2	29.6	18.1
Mycogen Seeds	8H449DM	HO,DM	1296	1713	1566	48.7	57	1.2	10.9	31.3	17.8
Mycogen Seeds	8N187	NS	927	1369	--	44.3	46	3.3	6.7	31.1	17.3
Mycogen Seeds	8N358CLDM	NS,CL,DM	1058	1469	1201	45.4	46	10.4	7.4	32.2	16.8
Mycogen Seeds	8N433DM	NS,DM	1023	--	--	47.1	51	8.8	7.6	27.4	17.7
Mycogen Seeds	8N510	NS	1266	1426	1494	45.4	50	0.0	9.4	26.5	18.2
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	628	--	--	45.2	51	1.8	11.0	31.8	17.1
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	983	--	--	45.2	50	0.0	10.3	30.7	17.8
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	737	--	--	45.0	52	6.2	10.3	29.5	16.8
Triumph Seed	s671	NS,SS	1185	1582	--	45.3	37	3.2	7.9	28.0	18.4
Triumph Seed	s674	NS,SS	1302	--	--	46.5	39	0.5	9.1	27.4	18.5
Triumph Seed	s678	NS,SS	1086	1435	1506	45.0	45	2.9	7.7	27.6	16.9
Triumph Seed	s655	NS,SS,DM	911	--	--	45.7	33	1.1	8.0	30.5	17.9
Triumph Seed	TRXs9422	NS,SS	728	--	--	45.2	37	1.6	7.8	24.6	17.7
Triumph Seed	s680CL	NS,CL,SS	876	--	--	44.9	36	2.9	9.6	29.5	17.6
USDA (check)	894	Trad.	619	856	860	47.7	44	2.4	9.9	31.3	16.1
Grand Mean			890	1343	1309	45.5	48	4.5	8.2	29.5	17.2
LSD 5%			289	305	267	1.9	4	ns	1.6	1.9	ns
C.V.			19.9	21.3	20.7	3.0	6.1	100.9	14.0	4.5	6.8

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Planted June 4, 2009. Harvested November 9, 2009. Previous crop = wheat.

Table 5. 2009 - Sunflower - Oilseed - Eureka, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed Yield 2009	Seed Yield 2-yr Avg.	Seed Yield 3-yr Avg.	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
			---------(lb/a)---------								
Croplan	306 DMR NS	NS,DM	1789	1946	--	45.1	59	0.8	15.1	26.0	20.5
Croplan	3080 DMR NS	NS,DM	2426	2129	--	46.5	57	4.3	14.6	26.4	26.3
Croplan	356A NS	NS	2771	--	--	44.9	56	1.3	16.2	28.1	20.1
Croplan	369 DMR NS	NS,DM	2527	2281	--	44.6	63	2.6	16.4	27.4	23.3
Croplan	378 DMR NS	NS,DM	2961	2399	--	45.5	65	2.2	18.8	26.9	22.3
Croplan	460 E NS	NS,Ex	2203	--	--	46.7	61	1.1	16.4	28.0	21.9
Croplan	555 CL DMR NS	NS,CL,DM	2449	--	--	45.0	65	0.3	15.9	26.8	25.0
Dahlgren	4416CL ConOil	NS,CL	2164	--	--	42.3	72	2.6	15.8	26.6	21.4
Dahlgren	4455 Con Oil	NS	2542	--	--	43.8	64	0.8	17.2	27.7	22.2
King Seed	SunKing 4404 NSCL	NS,CL	2400	2275	2210	45.9	67	3.7	15.3	27.3	26.3
King Seed	SunKing 4444 NS	NS	2872	--	--	44.2	61	4.5	16.3	26.0	23.4
Syngenta	DKF34-33 NS/DM	NS,DM	2294	2215	2236	46.1	63	4.2	15.0	28.8	20.6
Syngenta	DKF34-80CL	NS,CL	1948	1867	1832	46.0	62	0.4	14.7	26.7	22.3
Syngenta	DKF37-31 NS	NS	2385	2405	2316	47.7	60	1.2	15.9	28.5	24.4
Syngenta	DKF37-32 NS	NS	2506	--	--	45.9	59	0.3	15.8	28.9	27.0
Syngenta	DKF38-45 HO	HO	2729	2566	2570	45.5	56	0.3	16.6	29.2	23.7
Syngenta	DKF38-75 NS	NS	2221	2152	2223	45.9	60	5.6	17.8	26.0	20.2
Syngenta	DKF39-80CL	NS,CL	2224	2053	--	44.4	72	3.1	16.4	26.2	19.8
Syngenta	IS7120 HO/DM	HO,DM	1743	1809	1957	46.1	59	1.1	15.6	25.2	27.3
Syngenta	MH9001CL	NS,CL	2414	--	--	46.8	65	0.0	18.9	27.1	28.8
Syngenta	MH9002CL	NS,CL	2579	--	--	44.5	67	2.1	17.0	29.8	25.6
Mycogen Seeds	8D310	NS	2437	--	--	42.2	62	0.8	16.5	28.0	23.7
Mycogen Seeds	8D481	NS	2484	2414	--	44.7	67	1.3	16.8	28.1	25.3
Mycogen Seeds	8H288CLDM	HO,CL,DM	2180	--	--	47.4	61	1.3	14.6	28.0	24.9
Mycogen Seeds	8H449DM	HO,DM	2647	2366	2433	47.6	65	0.0	17.8	28.7	24.6
Mycogen Seeds	8N187	NS	2163	1974	--	45.6	54	2.2	13.7	26.9	22.8
Mycogen Seeds	8N358CLDM	NS,CL,DM	2127	2090	2242	48.0	63	1.3	15.0	26.9	27.0
Mycogen Seeds	8N433DM	NS,DM	2711	--	--	45.5	62	2.5	15.9	26.2	23.7
Mycogen Seeds	8N453DM	NS,DM	2302	2336	2243	46.0	65	0.0	16.6	27.9	24.2
Mycogen Seeds	8N510	NS	2522	2366	2558	44.4	65	2.0	15.2	26.0	25.0
Pannar Seed	PAN7813 NS	NS	2413	2222	2262	45.5	59	0.9	17.9	26.9	25.6
Pannar Seed	PAN7924 NS	NS	2591	2191	2254	45.5	67	3.7	17.5	27.0	24.3
Pannar Seed	PAN8466 NS/CL	NS,CL	1929	--	--	44.7	65	6.1	15.7	26.6	23.3
Pannar Seed	PEX7803	HO	2414	--	--	46.8	58	5.4	17.6	27.9	25.5
Pannar Seed	PEX7904	HO	2319	--	--	46.0	60	2.7	18.5	28.0	23.1
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1730	--	--	45.6	63	0.4	15.9	26.7	23.1
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	2165	--	--	45.8	61	0.0	17.4	27.6	25.0
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	2419	--	--	46.2	66	0.3	17.2	28.0	26.2
Seeds 2000	Badger CL	NS,CL	2319	--	--	43.1	66	2.6	15.5	26.8	22.6
Seeds 2000	Barracuda	NS,CL	2476	2202	2191	44.0	61	0.0	18.9	26.5	18.6
Seeds 2000	Blazer CL	NS,CL	2418	2182	2116	44.6	68	6.1	17.2	26.3	25.0
Seeds 2000	Firebird	NS,Ex	2277	2277	2435	45.3	57	0.5	17.3	26.6	20.4
Seeds 2000	Sierra	HO	1893	1850	1972	45.0	59	7.1	15.5	26.7	24.9
Triumph Seed	845HO	HO	2319	2186	--	47.1	65	2.6	18.8	26.0	21.2
Triumph Seed	s671	NS,SS	2473	2329	--	48.0	46	0.5	16.9	27.7	20.0

Table 5. 2009 - Sunflower - Oilseed - Eureka, S.D. (Continued)

Brand	Hybrid	Hybrid Type[1]	Seed Yield 2009	Seed Yield 2-yr Avg.	Seed Yield 3-yr Avg.	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
			---------(lb/a)---------								
Triumph Seed	s674	NS,SS	2900	--	--	48.9	43	1.9	16.2	27.9	27.7
Triumph Seed	s678	NS,SS	2795	2537	2374	47.9	50	1.8	18.4	29.2	26.3
Triumph Seed	s878H	HO,SS	2701	2499	--	46.6	54	0.8	17.1	27.1	24.0
Triumph Seed	s655	NS,SS,DM	2438	2347	--	47.7	40	1.6	15.8	27.8	25.5
Triumph Seed	TRXs9422	NS,SS	2370	--	--	47.2	41	1.2	17.3	27.8	22.9
Triumph Seed	TRXs9423	NS,SS	2535	--	--	46.9	42	2.8	17.7	27.1	19.0
Triumph Seed	s680CL	NS,CL,SS	2840	--	--	47.8	44	3.3	17.3	28.7	21.0
USDA (check)	894	Trad.	2243	1949	1845	48.1	52	1.2	17.2	27.2	22.5
USDA (check)	cms HA412/RHA 377	Trad.	1854	--	--	46.1	60	0.7	16.6	27.0	21.6
Grand Mean			2381	2214	2225	45.8	60	2.0	16.6	27.3	23.6
LSD 5%			581	340	265	2.0	5	3.7	1.6	1.5	ns
C.V.			17.5	15.2	14.6	3.1	6.2	132.8	7.1	3.9	17.3

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Planted May 27, 2009. Harvested November 6, 2009. Previous crop = corn.

Table 6. 2009 - Sunflower - Oilseed - Miller, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed[2] Yield (lb/a)	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
CHS Sunflower	08EXP01	Trad.		43.0	62	1.2	11.7	19.7	16.3
Croplan	306 DMR NS	NS,DM		46.3	60	1.2	12.1	23.0	16.3
Croplan	3080 DMR NS	NS,DM		47.0	58	4.2	12.0	25.6	16.3
Croplan	356A NS	NS		47.0	57	0.0	12.5	25.0	16.3
Croplan	369 DMR NS	NS,DM		45.5	64	0.0	12.9	23.7	16.3
Croplan	378 DMR NS	NS,DM		46.6	65	7.3	13.3	24.8	16.3
Croplan	460 E NS	NS,Ex		48.0	61	0.0	13.1	25.2	16.3
Croplan	555 CL DMR NS	NS,CL,DM		45.4	64	2.4	12.3	22.4	16.3
King Seed	SunKing 4404 NSCL	NS,CL		44.1	63	2.4	12.3	24.7	16.3
King Seed	SunKing 4444 NS	NS		45.0	60	3.6	11.9	22.5	16.3
Syngenta	DKF34-33 NS/DM	NS,DM		47.5	57	6.0	13.5	25.9	16.3
Syngenta	DKF34-80CL	NS,CL		46.1	58	1.8	11.6	20.9	16.3
Syngenta	DKF37-31 NS	NS		48.1	61	0.0	13.1	27.4	16.3
Syngenta	DKF37-32 NS	NS		44.4	60	0.0	13.1	25.4	16.3
Syngenta	DKF38-45 HO	HO		46.9	56	0.0	12.6	24.4	16.3
Syngenta	DKF38-75 NS	NS		46.3	64	3.3	12.9	26.3	16.3
Syngenta	DKF39-80CL	NS,CL		44.5	65	1.2	11.3	22.8	16.3
Syngenta	IS7120 HO/DM	HO,DM		45.5	57	1.2	12.3	23.4	16.3
Syngenta	MH9001CL	NS,CL		46.1	61	0.0	13.4	24.4	16.3
Syngenta	MH9002CL	NS,CL		45.2	59	1.8	13.3	26.6	16.3
Mycogen Seeds	8D310	NS		42.1	64	4.8	13.1	23.4	16.3
Mycogen Seeds	8D481	NS		44.0	63	0.0	13.2	23.1	16.3
Mycogen Seeds	8H288CLDM	HO,CL		46.3	61	1.8	12.0	22.4	16.3
Mycogen Seeds	8H449DM	HO,DM		47.9	65	0.0	13.1	24.6	16.3
Mycogen Seeds	8N187	NS		44.6	52	0.0	12.4	20.6	16.3
Mycogen Seeds	8N358CLDM	NS,CL,DM		45.4	60	1.8	11.8	22.0	16.3
Mycogen Seeds	8N433DM	NS,DM		47.7	66	4.2	12.3	22.7	16.3
Mycogen Seeds	8N453DM	NS,DM		45.4	61	0.0	12.5	22.2	16.3
Mycogen Seeds	8N510	NS		45.6	62	0.0	12.3	23.6	16.3
Pannar Seed	PAN7813 NS	NS		45.3	58	0.0	12.2	24.1	16.3
Pannar Seed	PAN7924 NS	NS		43.4	58	0.6	12.5	23.3	16.3
Pannar Seed	PAN8466 NS/CL	NS,CL		44.1	61	1.2	12.0	21.8	16.3
Pannar Seed	PEX7803	HO		47.8	52	0.8	12.9	24.3	14.9
Pannar Seed	PEX7904	HO		44.5	58	1.2	12.5	21.9	14.0
Pioneer Hi-Bred	Pioneer Brand 63M91	NS		46.6	63	0.0	12.3	21.9	14.3
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex		48.4	57	0.6	13.3	25.8	15.0
Pioneer Hi-Bred	Pioneer Brand 64H41	HO		45.2	65	1.8	12.9	22.0	15.3
Seeds 2000	Badger CL	NS,CL		43.6	64	0.0	12.2	25.4	15.2
Seeds 2000	Barracuda	NS,CL		46.4	60	0.0	12.7	24.3	14.2
Seeds 2000	Blazer CL	NS,CL		46.0	63	0.9	12.5	23.5	14.4
Seeds 2000	Firebird	NS,Ex		45.6	57	0.0	13.0	26.0	16.3
Seeds 2000	Sierra	HO		44.6	57	0.6	12.9	22.4	16.3
Triumph Seed	660CL	NS,CL		46.9	68	0.6	12.5	24.7	16.3
Triumph Seed	859HOCL	HO,CL		47.2	61	0.0	12.7	26.1	16.3
Triumph Seed	s668	NS,SS		50.7	51	0.0	13.0	27.2	17.6
Triumph Seed	s671	NS,SS		46.4	47	0.0	12.7	24.4	16.3
Triumph Seed	s674	NS,SS		47.8	48	0.0	13.1	24.5	16.3
Triumph Seed	s678	NS,SS		48.1	50	0.0	13.2	26.1	16.3
Triumph Seed	s878H	HO,SS		47.5	51	0.0	13.4	25.9	16.3
Triumph Seed	s655	NS,SS,DM		48.1	45	0.0	12.6	23.0	16.3

Table 6. 2009 - Sunflower - Oilseed - Miller, S.D. (Continued)

Brand	Hybrid	Hybrid Type[1]	Seed[2] Yield (lb/a)	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
Triumph Seed	TRXs9422	NS,SS		48.2	42	0.0	13.4	24.2	16.3
Triumph Seed	TRXs9423	NS,SS		47.9	45	0.0	13.1	25.4	16.3
Triumph Seed	TRXs9425	NS,SS		47.2	42	0.0	12.9	25.7	16.3
Triumph Seed	s680CL	NS,CL,SS		46.2	38	1.2	13.4	29.4	16.3
Triumph Seed	TRX 8341	NS		46.3	56	4.2	12.8	24.1	16.3
USDA (check)	USDA 894 (check)	Trad.		47.5	49	1.8	12.3	24.4	14.6
Grand Mean				46.2	58	1.2	12.7	24.1	16.1
LSD 5%				2.0	5	3.3	0.6	2.2	ns
C.V.				3.1	5.4	174	3.0	5.6	7.2

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
[2]Seed yields not reported due to high C.V.
Oil % is adjusted for oleic acid content.
Planted June 4, 2009. Harvested November 16, 2009.

Table 7. 2009 - Sunflower - Oilseed - Onida, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed Yield 2009 (lb/a)	Seed Yield 2008 (lb/a)	Seed Yield 2-yr Avg. (lb/a)	Oil Cont. (%)	Days to Flwr (days)	Days to Mat. (days)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)	Hulling[2] Quality
CHS Sunflower	08EXP01	Trad.	2202	--	--	38.8	66	105	64	2.5	12.0	26.7	16.5	
Croplan	306 DMR NS	NS,DM	2195	1809	2002	41.8	63	104	63	1.3	12.0	29.7	17.4	
Croplan	3080 DMR NS	NS,DM	2298	1603	1951	45.3	63	104	64	2.1	10.0	29.3	17.4	
Croplan	356A NS	NS	2228	--	--	42.5	66	105	65	0.8	12.5	29.2	17.4	
Croplan	369 DMR NS	NS,DM	2103	1859	1981	43.7	65	103	69	0.4	12.1	28.3	17.4	
Croplan	378 DMR NS	NS,DM	2486	1400	1943	43.2	66	107	72	0.9	12.9	28.4	17.0	
Croplan	460 E NS	NS,Ex	2303	--	--	43.3	67	105	70	2.5	12.7	28.6	17.4	
Croplan	555 CL DMR NS	NS,CL,DM	1930	--	--	42.5	67	103	70	1.7	12.8	28.5	17.2	
Dahlgren	4416CL ConOil	NS,CL	2312	--	--	38.0	66	104	72	3.5	13.4	27.5	16.3	
Dahlgren	4455 Con Oil	NS	2106	1991	2049	39.8	64	100	68	1.7	12.9	28.0	17.4	
King Seed	SunKing 4404 NSCL	NS,CL	1946	1554	1750	41.4	67	110	68	5.8	12.9	27.9	17.4	
King Seed	SunKing 4444 NS	NS	2230	--	--	43.2	66	104	66	6.3	12.9	28.2	17.4	
Syngenta	DKF34-33 NS/DM	NS,DM	2320	1718	2019	44.9	63	103	63	2.9	11.1	30.4	17.4	
Syngenta	DKF34-80CL	NS,CL	2263	1910	2087	44.2	65	101	66	2.9	10.8	28.6	17.4	
Syngenta	DKF37-31 NS	NS	2126	2002	2064	43.3	65	104	63	2.5	12.0	29.6	17.4	
Syngenta	DKF37-32 NS	NS	2247	--	--	43.1	65	103	62	2.5	12.4	29.5	17.4	
Syngenta	DKF38-45 HO	HO	1900	1916	1908	45.2	64	101	63	2.1	12.0	29.9	17.4	
Syngenta	DKF38-75 NS	NS	2217	2020	2118	42.6	66	104	66	12.1	12.5	29.6	17.4	
Syngenta	DKF39-80CL	NS,CL	1963	1216	1589	42.0	67	104	76	3.8	13.0	29.0	17.4	
Syngenta	IS7120 HO/DM	HO,DM	2210	1722	1966	44.0	62	101	61	2.9	11.7	29.4	17.4	
Syngenta	MH9001CL	NS,CL	2142	--	--	43.3	67	105	69	2.5	14.3	29.8	17.4	
Syngenta	MH9002CL	NS,CL	2133	--	--	42.1	65	102	69	0.0	12.6	30.0	17.4	
Mycogen Seeds	8D310	NS	2435	--	--	41.9	62	97	68	1.3	12.7	28.6	17.4	Excel.
Mycogen Seeds	8D481	NS	2039	2091	2065	43.7	65	105	69	1.7	12.4	29.1	17.4	Excel.
Mycogen Seeds	8H288CLDM	HO,CL	2208	--	--	44.1	61	103	66	2.1	12.0	29.4	16.8	
Mycogen Seeds	8H449DM	HO,DM	2027	1967	1997	45.3	65	105	67	0.8	13.3	29.5	17.4	
Mycogen Seeds	8N187	NS	2268	1619	1944	42.8	64	102	61	1.3	11.9	29.0	17.4	Excel.
Mycogen Seeds	8N358CLDM	NS,CL,DM	1925	1631	1778	44.8	63	102	64	2.9	12.4	30.0	17.4	
Mycogen Seeds	8N433DM	NS,DM	2128	--	--	45.7	65	103	67	1.7	11.5	28.7	17.4	Excel.
Mycogen Seeds	8N453DM	NS,DM	2150	1973	2062	45.6	64	102	68	3.5	12.6	30.3	17.0	
Mycogen Seeds	8N510	NS	2272	2075	2173	43.5	67	104	67	2.1	12.5	28.4	17.4	Excel.
Pannar Seed	PAN7813 NS	NS	2177	1665	1921	42.1	65	105	68	3.3	13.4	29.0	17.4	
Pannar Seed	PAN7924 NS	NS	2233	2113	2173	42.5	66	105	66	3.3	13.2	28.6	17.4	
Pannar Seed	PAN8466 NS/CL	NS,CL	1900	--	--	42.4	67	104	72	5.0	12.8	28.3	17.0	
Pannar Seed	PEX7803	HO	2271	--	--	42.3	65	105	60	4.6	13.3	28.9	17.4	
Pannar Seed	PEX7904	HO	2190	--	--	43.9	66	104	63	2.9	13.1	29.1	17.4	
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	2054	1524	1789	44.2	63	101	69	1.3	11.6	29.5	17.4	
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	2556	1793	2174	43.9	65	106	69	1.7	13.1	30.2	17.4	
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	2144	1653	1898	43.4	65	103	72	2.9	13.5	30.2	17.4	
Seeds 2000	Badger CL	NS,CL	2241	--	--	39.2	64	103	74	3.3	12.3	28.3	17.4	
Seeds 2000	Barracuda	NS,CL	2324	1972	2148	42.7	65	105	63	1.7	14.0	29.2	17.4	
Seeds 2000	Blazer CL	NS,CL	2109	1701	1905	41.9	67	103	70	1.7	12.2	27.4	17.0	
Seeds 2000	Firebird	NS,Ex	1889	2072	1980	41.5	67	107	65	4.2	13.1	28.5	17.4	
Seeds 2000	Sierra	HO	1869	1588	1728	40.8	68	107	67	6.7	11.6	26.3	17.4	
Triumph Seed	845HO	HO	2329	2163	2246	44.0	66	104	67	4.2	13.2	28.4	17.4	
Triumph Seed	s668	NS,SS	2421	1721	2071	44.7	66	111	50	0.8	12.9	29.4	17.4	
Triumph Seed	s671	NS,SS	1873	1711	1792	44.6	68	107	51	2.3	12.6	30.2	18.9	
Triumph Seed	s674	NS,SS	1734	--	--	45.1	70	112	48	1.7	12.8	29.1	17.4	
Triumph Seed	s678	NS,SS	2052	1985	2018	44.6	68	112	54	0.8	13.0	29.7	17.4	
Triumph Seed	s878H	HO,SS	2274	1758	2016	43.7	68	111	56	1.4	12.6	30.3	16.5	

Table 7. 2009 - Sunflower - Oilseed - Onida, S.D. (Continued)

Brand	Hybrid	Hybrid Type[1]	Seed Yield 2009	Seed Yield 2008	Seed Yield 2-yr Avg.	Oil Cont. (%)	Days to Flwr	Days to Mat.	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)	Hulling[2] Quality
			------(lb/a)-------				---(days)---							
Triumph Seed	s655	NS,SS,DM	1935	--	--	42.6	67	108	42	0.4	12.7	29.7	17.4	
Triumph Seed	TRXs9422	NS,SS	1975	--	--	45.8	71	114	48	2.5	12.5	29.2	17.4	
Triumph Seed	TRXs9423	NS,SS	1697	--	--	44.2	71	115	48	0.8	12.5	29.0	17.4	
Triumph Seed	TRXs9425	NS,SS	1776	--	--	45.2	70	115	43	1.3	13.0	29.1	17.4	
Triumph Seed	s680CL	NS,CL,SS	1831	--	--	45.5	70	114	44	2.1	12.1	29.9	17.4	
USDA (check)	894	Trad.	1983	1693	1838	44.8	64	103	62	2.0	12.7	28.9	15.7	
Grand Mean			2128	1800	1975	43.2	66	105	63	2.6	12.5	29.0	17.3	
LSD 5%			ns	389	282	2.0	1	3	4	4.0	1.0	1.0	ns	
C.V.			13.8	16.0	14.5	3.2	1.0	1.6	4.5	112.5	5.5	2.5	4.3	

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
[2]Hulling quality: Excel = >65% of seed passes over a 14/64 screen; Good = >75% of seed passes over a 13/64 screen.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Planted June 12, 2009. Harvested Nov. 9, 2009. Previous crop = wheat.

Table 8. 2009 - Sunflower - Oilseed - Reliance, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2009	Seed Yield[2] 2-yr Avg.	Seed Yield[2] 3-yr Avg.	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
			--------(lb/a)--------								
Croplan	306 DMR NS	NS,DM	2316	2331	--	43.6	61	1.9	12.3	29.1	14.8
Croplan	3080 DMR NS	NS,DM	1961	2168	--	46.5	66	3.1	11.6	29.5	14.9
Croplan	356A NS	NS	2175	--	--	45.1	63	2.3	12.0	29.2	14.0
Croplan	369 DMR NS	NS,DM	2394	2176	--	44.3	65	4.2	11.9	28.8	15.7
Croplan	378 DMR NS	NS,DM	2721	2416	--	43.9	70	3.7	12.2	29.2	15.7
Croplan	460 E NS	NS,Ex	1903	--	--	46.5	70	4.2	12.0	29.2	15.7
Croplan	555 CL DMR NS	NS,CL,DM	2105	--	--	42.1	72	2.3	11.7	28.6	15.7
King Seed	SunKing 4404 NSCL	NS,CL	2070	2228	2238	42.4	66	5.1	12.1	28.2	15.7
King Seed	SunKing 4444 NS	NS	1898	--	--	43.5	67	3.7	12.2	28.1	15.7
Syngenta	DKF34-33 NS/DM	NS,DM	1996	2250	1971	45.8	61	6.3	11.8	30.4	12.9
Syngenta	DKF34-80CL	NS,CL	2076	2251	2072	43.9	58	2.8	11.7	27.7	14.3
Syngenta	DKF37-31 NS	NS	2308	2694	2429	45.6	57	4.6	11.7	29.4	13.4
Syngenta	DKF37-32 NS	NS	2425	--	--	44.0	58	2.7	11.8	28.8	14.2
Syngenta	DKF38-45 HO	HO	2283	2449	2338	45.0	61	5.0	11.7	30.6	14.5
Syngenta	DKF38-75 NS	NS	1698	2313	2320	43.7	62	2.0	11.8	29.2	9.7
Syngenta	DKF39-80CL	NS,CL	2253	2264		43.6	72	4.2	12.0	29.0	15.7
Syngenta	IS7120 HO/DM	HO,DM	2068	2295	2136	43.1	62	2.3	11.8	29.6	15.7
Syngenta	MH9001CL	NS,CL	2215	--	--	43.3	66	3.3	12.6	29.4	15.3
Syngenta	MH9002CL	NS,CL	1932	--	--	42.5	69	2.3	12.0	31.3	15.7
Mycogen Seeds	8D310	NS	2618	--	--	39.9	68	3.7	12.0	29.3	15.7
Mycogen Seeds	8D481	NS	2282	2392	--	42.6	70	0.6	12.3	29.0	14.0
Mycogen Seeds	8H449DM	HO,DM	2069	2146	2035	46.7	68	3.2	11.7	29.5	15.7
Mycogen Seeds	8N187	NS	2237	2305	--	42.9	58	7.4	12.0	28.9	15.7
Mycogen Seeds	8N358CLDM	NS,CL,DM	2014	2104	2071	43.3	69	4.2	11.8	28.8	15.3
Mycogen Seeds	8N433DM	NS,DM	2186	--	--	45.0	65	2.8	11.7	29.6	15.5
Mycogen Seeds	8N453DM	NS,DM	2267	2415	2264	46.5	66	3.7	11.8	29.7	15.1
Mycogen Seeds	8N510	NS	2885	2886	2695	42.4	66	1.9	12.1	28.1	15.7
Pannar Seed	PAN7813 NS	NS	2661	2552	2394	42.7	64	5.4	12.3	29.0	15.6
Pannar Seed	PAN7924 NS	NS	2218	2376	2235	43.3	67	1.0	12.2	27.5	15.5
Pannar Seed	PAN8466 NS/CL	NS,CL	2169	--	--	42.3	66	5.0	12.4	27.9	13.2
Pannar Seed	PEX7803	HO	2522	--	--	45.1	56	5.0	12.1	29.6	15.7
Pannar Seed	PEX7904	HO	2084	--	--	44.2	61	3.6	12.1	28.9	14.4
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1887	2042	--	44.5	69	7.0	12.1	29.0	15.1
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	2108	2341	--	44.0	64	1.4	12.0	30.9	15.3
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	2072	2165	--	43.7	70	1.2	12.1	31.5	14.8
Seeds 2000	Badger CL	NS,CL	2290	--	--	40.5	70	3.7	11.8	28.9	15.6
Seeds 2000	Barracuda	NS,CL	2163	2128	2029	44.0	66	4.9	12.7	29.4	15.1
Seeds 2000	Blazer CL	NS,CL	2026	1969	2016	42.7	67	4.8	12.4	28.2	11.6
Seeds 2000	Firebird	NS,Ex	2154	2350	2242	41.5	61	3.8	11.7	28.6	15.5
Seeds 2000	Sierra	HO	2021	2227	2149	43.0	64	5.6	11.9	26.1	14.8
Triumph Seed	s668	NS,SS	2622	--	--	46.4	50	0.5	12.0	29.7	15.7
Triumph Seed	s671	NS,SS	2282	2461	--	45.4	48	5.1	11.9	30.2	15.7
Triumph Seed	s674	NS,SS	1884	--	--	45.6	42	5.6	11.8	28.8	15.7
Triumph Seed	s678	NS,SS	2300	2443	2221	45.5	54	6.0	11.9	30.3	15.7
Triumph Seed	s878H	HO,SS	2602	2598	2398	46.5	54	4.6	12.0	31.3	15.7

Table 8. 2009 - Sunflower - Oilseed - Reliance, S.D. (Continued)

Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2009	Seed Yield[2] 2-yr Avg.	Seed Yield[2] 3-yr Avg.	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
			--------(lb/a)--------								
Triumph Seed	s655	NS,SS,DM	2394	2742	--	46.1	42	2.8	11.8	30.0	15.7
Triumph Seed	TRXs9422	NS,SS	2648	--	--	46.8	40	2.8	11.8	29.8	15.1
Triumph Seed	TRXs9423	NS,SS	2298	--	--	46.2	48	4.8	12.0	29.4	16.9
Triumph Seed	TRXs9425	NS,SS	2244	--	--	47.0	43	3.2	11.9	29.4	15.7
Triumph Seed	s680CL	NS,CL,SS	1916	--	--	47.4	43	5.8	11.9	29.4	16.5
USDA (check)	894	Trad.	1891	1806	1870	45.9	61	0.9	11.5	30.0	15.7
USDA (check)	cms HA412/RHA 377	Trad.	1599	--	--	46.4	67	4.8	12.0	28.6	14.4
Grand Mean			2200	2321	2206	44.3	61	3.7	12.0	29.2	15.0
LSD 5%			466	302	234	1.6	4	ns	0.4	1.4	1.9
C.V.			15.2	13.4	13.1	2.6	5.1	100.4	2.3	3.4	9.2

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
[2]Three-year yield average is from 2009 Reliance, 2008 Reliance, and 2007 Presho, SD.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.
Planted June 17, 2009. Harvested November 12, 2009. Previous crop = wheat.

Table 9. 2009 - Sunflower - Confection Hybrid - Miller, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed[2] Yield (lb/a)	Plant Height (inch)	Test Wt. (lb/bu)	Lodge (%)	Pop. x1000 Plt/a (plants)	Seed Over Screen 22/64	20/64	18/64	Nut-meat (%)
								----------(%)----------			
CHS Sunflower	RH 1121	Conf.		67	17.3	3.1	16.3	74	78	83	44.3
CHS Sunflower	RH 3126RT	Conf.		64	17.5	7.0	15.1	70	80	85	44.9
CHS Sunflower	RH 400CL	Conf./CL		53	17.6	6.3	15.6	80	88	92	45.5
Croplan Genetics	179	Conf.		61	17.7	2.1	16.1	79	87	91	43.8
Dahlgren & Co.	9579	Conf.		57	16.6	5.4	15.2	76	82	87	45.5
Dahlgren & Co.	9592	Conf.		65	17.4	2.4	16.5	85	88	91	46.7
Dahlgren & Co.	95EXCL	Conf./CL		65	17.4	5.1	14.9	84	87	88	47.7
Mycogen Seeds	8C451	Conf.		63	18.5	0.5	16.3	79	86	88	45.1
Red River Comm.	RRC 2215	Conf.		63	18.5	1.4	13.8	82	87	90	47.7
Red River Comm.	RRC 2216	Conf.		67	18.3	1.3	15.7	69	82	87	47.8
Red River Comm.	RRC 2217	Conf.		64	17.6	0.0	15.8	78	83	87	46.0
Seeds 2000	Jaguar	Conf./CL		60	18.1	2.1	16.1	79	88	91	47.3
Seeds 2000	Panther II	Conf.		60	19.0	3.3	15.6	76	86	88	45.5
Seeds 2000	X9681	Conf.		66	18.3	2.3	16.3	68	82	85	46.7
Triumph Seed	747C	Conf.		57	18.5	2.4	16.5	68	86	90	47.1
Triumph Seed	777C	Conf.		67	18.2	7.6	16.3	73	78	81	49.0
USDA	924 (check)	Conf.		68	18.9	4.5	16.1	63	69	74	48.0
Grand Mean				63	18.0	3.3	15.8	75	83	87	46.4
LSD 5%				4	ns	ns	ns	ns	11	ns	ns
C.V.				5.0	5.6	109	7.5	13.8	8.9	7.8	4.6

[1]Type: Conf. = Confection, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Planted June 4, 2009. Harvested November 17, 2009.
[2]Seed yields not reported due to high C.V.

Table 10. 2009 - Sunflower - Confection Hybrid - Onida, S.D.

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Days to Flwr	Days to Mat.	Plant Height (inch)	Test Wt. (lb/bu)	Lodge (%)	Pop. x1000 Plt/a (plants)	Seed Over Screen 22/64	Seed Over Screen 20/64	Seed Over Screen 18/64	Nut-meat (%)
				---(days)---						----------(%)---------			
CHS Sunflower	RH 1121	Conf.	2306	68	112	72	21.5	4.2	17.4	78	90	93	46.0
CHS Sunflower	RH 3126RT	Conf.	1812	65	106	74	21.9	1.8	16.8	72	86	90	46.3
CHS Sunflower	RH 400CL	Conf./CL	2016	60	99	62	22.3	3.1	17.0	73	84	89	46.4
Croplan	179	Conf.	2398	68	117	73	22.0	0.8	17.4	81	88	91	46.3
Dahlgren	9579	Conf.	2017	65	108	61	20.5	1.7	17.0	80	93	95	45.7
Dahlgren	9592	Conf.	2120	65	107	74	22.3	2.1	16.8	83	96	98	54.8
Dahlgren	95EXCL	Conf./CL	2259	66	106	72	21.5	4.0	16.6	79	83	87	49.2
Mycogen Seeds	8C451	Conf.	2362	67	106	72	20.1	0.8	17.4	83	89	90	51.4
Red River Comm.	RRC 2215	Conf.	2699	64	103	73	21.1	2.5	16.8	78	86	89	48.1
Red River Comm.	RRC 2216	Conf.	2447	65	105	76	22.1	3.8	17.4	83	89	90	48.5
Red River Comm.	RRC 2217	Conf.	2066	66	108	72	19.7	3.2	16.3	81	89	91	49.0
Seeds 2000	Jaguar	Conf./CL	2162	60	101	71	21.8	6.3	17.4	72	87	90	47.9
Seeds 2000	Panther II	Conf.	2298	63	104	70	23.2	7.5	17.4	73	87	90	47.9
Seeds 2000	X9681	Conf.	2309	66	109	76	19.7	1.9	14.6	83	86	89	46.2
USDA (check)	924	Conf.	1801	65	103	76	23.1	5.3	16.3	34	51	64	53.0
Grand Mean			2205	65	106	72	21.5	3.3	16.8	75	86	89	48.4
LSD 5%			393	1	4	4	ns	ns	ns	12	9	8	5.6
C.V.			12.5	1.3	2.3	4.1	9.3	93.2	8.2	11.3	7.6	6.5	8.1

[1]Type: Conf. = Confection, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Planted June 12, 2009. Harvested November 10, 2009.

Table 11. 2009 - Sunflower - Oilseed - Averages across three locations (Eureka, Onida, and Reliance, S.D.).

Brand	Hybrid	Hybrid Type[1]	2009 Seed Yield (lb/a)	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
Croplan	306 DMR NS	NS,DM	2100	43.5	61	1.3	13.2	28.2	17.5
Croplan	3080 DMR NS	NS,DM	2229	46.1	62	3.2	12.1	28.4	19.5
Croplan	356A NS	NS	2391	44.2	61	1.5	13.6	28.8	17.1
Croplan	369 DMR NS	NS,DM	2342	44.2	65	2.4	13.4	28.2	18.8
Croplan	378 DMR NS	NS,DM	2722	44.2	69	2.3	14.6	28.2	18.3
Croplan	460 E NS	NS,Ex	2136	45.5	67	2.6	13.7	28.6	18.3
Croplan	555 CL DMR NS	NS,CL,DM	2161	43.2	69	1.5	13.5	28.0	19.3
King Seed	SunKing 4404 NSCL	NS,CL	2139	43.3	67	4.9	13.4	27.8	19.8
King Seed	SunKing 4444 NS	NS	2333	43.6	65	4.8	13.8	27.4	18.8
Syngenta	DKF34-33 NS/DM	NS,DM	2203	45.6	62	4.4	12.6	29.9	17.0
Syngenta	DKF34-80CL	NS,CL	2095	44.7	62	2.0	12.4	27.7	18.0
Syngenta	DKF37-31 NS	NS	2273	45.5	60	2.8	13.2	29.2	18.4
Syngenta	DKF37-32 NS	NS	2393	44.4	60	1.8	13.3	29.1	19.5
Syngenta	DKF38-45 HO	HO	2304	45.2	60	2.5	13.4	29.9	18.5
Syngenta	DKF38-75 NS	NS	2045	44.1	63	6.6	14.0	28.2	15.7
Syngenta	DKF39-80CL	NS,CL	2147	43.4	74	3.7	13.8	28.1	17.6
Syngenta	IS7120 HO/DM	HO,DM	2007	44.4	61	2.1	13.1	28.1	20.1
Syngenta	MH9001CL	NS,CL	2257	44.5	67	1.9	15.2	28.8	20.5
Syngenta	MH9002CL	NS,CL	2215	43.0	69	1.5	13.9	30.4	19.6
Mycogen Seeds	8D310	NS	2497	41.3	66	1.9	13.7	28.6	18.9
Mycogen Seeds	8D481	NS	2268	43.7	69	1.2	13.8	28.7	18.9
Mycogen Seeds	8H449DM	HO,DM	2248	46.6	67	1.4	14.2	29.2	19.2
Mycogen Seeds	8N187	NS	2223	43.8	57	3.6	12.5	28.2	18.6
Mycogen Seeds	8N358CLDM	NS,CL,DM	2022	45.3	66	2.8	13.1	28.6	19.9
Mycogen Seeds	8N433DM	NS,DM	2342	45.4	65	2.3	13.0	28.2	18.9
Mycogen Seeds	8N453DM	NS,DM	2240	46.0	66	2.4	13.6	29.3	18.8
Mycogen Seeds	8N510	NS	2560	43.4	66	2.0	13.3	27.5	19.4
Pannar Seed	PAN7813 NS	NS	2417	43.5	63	3.2	14.5	28.3	19.5
Pannar Seed	PAN7924 NS	NS	2347	43.8	67	2.7	14.3	27.7	19.1
Pannar Seed	PAN8466 NS/CL	NS,CL	1999	43.2	68	5.4	13.6	27.6	17.8
Pannar Seed	PEX7803	HO	2402	44.8	58	5.0	14.3	28.8	19.5
Pannar Seed	PEX7904	HO	2198	44.7	61	3.1	14.6	28.6	18.3
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1890	44.8	67	2.9	13.2	28.4	18.5
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	2276	44.6	65	1.0	14.2	29.6	19.2
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	2211	44.4	69	1.5	14.3	29.9	19.4
Seeds 2000	Badger CL	NS,CL	2283	40.9	70	3.2	13.2	28.0	18.5
Seeds 2000	Barracuda	NS,CL	2321	43.6	63	2.2	15.2	28.3	17.0
Seeds 2000	Blazer CL	NS,CL	2184	43.1	68	4.2	13.9	27.3	17.8
Seeds 2000	Firebird	NS,Ex	2107	42.8	61	2.8	14.1	27.9	17.8
Seeds 2000	Sierra	HO	1928	42.9	63	6.5	13.0	26.3	19.0
Triumph Seed	s671	NS,SS	2209	46.0	48	2.6	13.8	29.4	18.2
Triumph Seed	s674	NS,SS	2173	46.5	44	3.0	13.6	28.6	20.3
Triumph Seed	s678	NS,SS	2382	46.0	52	2.9	14.4	29.7	19.8
Triumph Seed	s878H	HO,SS	2526	45.6	55	2.2	13.9	29.6	18.8
Triumph Seed	s655	NS,SS,DM	2256	45.5	41	1.6	13.4	29.1	19.5
Triumph Seed	TRXs9422	NS,SS	2331	46.6	43	2.2	13.9	28.9	18.5
Triumph Seed	TRXs9423	NS,SS	2177	45.8	46	2.8	14.1	28.5	17.7
Triumph Seed	s680CL	NS,CL,SS	2195	46.9	43	3.7	13.8	29.3	18.3
USDA (check)	894	Trad.	2039	46.3	58	1.4	13.8	28.7	18.0
Grand Mean			2229	44.5	62	2.8	13.7	28.6	18.7
LSD 5%			282	1.1	3	2.5	0.6	0.8	2.0
C.V.			15.7	3.0	5.3	112.8	5.9	3.3	13.5

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

Table 12. 2009 - Sunflower - Oilseed - Averages across four locations (Bison, Eureka, Onida, and Reliance, S.D.).

Brand	Hybrid	Hybrid Type[1]	2009 Seed Yield (lb/a)	Oil Cont. (%)	Plant Height (inch)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 Plt/a (plants)
Croplan	306 DMR NS	NS,DM	1811	44.1	59	2.6	11.0	28.3	17.3
Croplan	3080 DMR NS	NS,DM	1929	46.7	59	5.3	10.6	28.7	19.2
Croplan	356A NS	NS	2021	44.6	58	1.5	11.6	28.8	17.3
Croplan	369 DMR NS	NS,DM	1960	44.3	62	2.9	11.8	27.9	18.1
Croplan	378 DMR NS	NS,DM	2291	44.1	65	2.5	14.2	28.6	18.2
Croplan	460 E NS	NS,Ex	1762	45.6	63	3.4	12.8	28.7	18.2
Croplan	555 CL DMR NS	NS,CL,DM	1799	44.1	65	2.4	11.9	27.6	18.8
King Seed	SunKing 4404 NSCL	NS,CL	1812	43.5	62	3.9	11.9	28.2	19.3
King Seed	SunKing 4444 NS	NS	1970	43.3	62	4.4	12.8	27.8	18.0
Syngenta	DKF34-33 NS/DM	NS,DM	1819	45.8	59	4.9	11.0	31.0	16.8
Syngenta	DKF34-80CL	NS,CL	1725	44.9	59	4.2	10.6	28.5	17.8
Syngenta	DKF37-31 NS	NS	1904	45.4	57	4.4	11.8	29.4	18.0
Syngenta	DKF37-32 NS	NS	2000	44.4	57	3.3	11.8	29.6	18.9
Syngenta	DKF38-45 HO	HO	1946	45.8	57	2.6	12.2	30.3	18.1
Syngenta	DKF38-75 NS	NS	1741	43.8	59	6.7	12.5	28.2	15.7
Syngenta	DKF39-80CL	NS,CL	1771	43.8	69	4.1	12.3	28.3	17.2
Syngenta	IS7120 HO/DM	HO,DM	1760	44.5	58	3.0	11.2	28.9	19.4
Syngenta	MH9001CL	NS,CL	1898	44.7	63	2.9	14.4	28.9	19.5
Syngenta	MH9002CL	NS,CL	1857	43.4	64	2.1	12.4	30.2	19.2
Mycogen Seeds	8H449DM	HO,DM	2010	47.1	64	1.3	13.4	29.7	18.9
Mycogen Seeds	8N187	NS	1899	43.9	55	3.6	11.1	28.9	18.3
Mycogen Seeds	8N358CLDM	NS,CL,DM	1781	45.3	61	4.7	11.7	29.5	19.1
Mycogen Seeds	8N433DM	NS,DM	2012	45.8	61	3.9	11.7	28.0	18.6
Mycogen Seeds	8N510	NS	2236	43.9	62	1.5	12.3	27.3	19.1
Pioneer Hi-Bred	Pioneer Brand 63M91	NS	1575	44.9	63	2.6	12.7	29.2	18.2
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Ex	1953	44.7	61	0.8	13.2	29.9	18.9
Pioneer Hi-Bred	Pioneer Brand 64H41	HO	1843	44.6	65	2.7	13.3	29.8	18.8
Triumph Seed	s671	NS,SS	1953	45.8	45	2.8	12.3	29.0	18.2
Triumph Seed	s674	NS,SS	1955	46.5	43	2.4	12.5	28.3	19.8
Triumph Seed	s678	NS,SS	2058	45.8	51	2.9	12.8	29.2	19.1
Triumph Seed	s655	NS,SS,DM	1919	45.5	39	1.5	12.1	29.5	19.1
Triumph Seed	TRXs9422	NS,SS	1930	46.3	42	2.0	12.3	27.9	18.3
Triumph Seed	s680CL	NS,CL,SS	1866	46.4	41	3.5	12.7	29.4	18.1
USDA (check)	894	Trad.	1684	46.6	55	1.6	12.8	29.3	17.5
Grand Mean			1896	45.0	58	3.1	12.2	28.9	18.4
LSD 5%			229	0.9	2	2.5	0.6	0.7	1.6
C.V.			16.7	3.0	5.5	114.2	7.4	3.6	12.1

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional, CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.
Yield is reported at 10% moisture. Oil % is adjusted for oleic acid content.

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South Dakota Flax Variety Evaluations 2009

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The success of flax production is affected by choice of variety. Variety characteristics such as seed yield, oil content, disease resistance, and maturity should be examined carefully when deciding which variety or varieties to plant. In some cases oil content or other traits may offset a yield advantage.

YIELD

Evaluate as much yield data as possible when selecting a variety, looking at relative performance over many locations and years. For example, variety comparisons over 3 years are better than those from a single year or location. A consistent performance of a variety over many environments is called *yield stability*.

Good yield stability means that a variety may or may not be the best yielder at all locations, but it ranks high in yield potential at many locations. A variety that ranks in the upper 20% over all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.05) value at the bottom of each data column. The LSD value is a statistical way to indicate if a trait like yield differs when comparing two varieties. If two varieties differ by more than the indicated LSD value for a given trait, they will likely differ when grown again under highly similar conditions.

If the LSD.05 value is indicated as "ns," it means that there were *no statistically significant differences in yield* among the varieties. In other words, the variety yields were all close enough to each other to be essentially the same, considering the amount of variation inherent in the test.

When evaluating yield, look at as many trials as possible. Trial results from neighboring states are readily available and provide additional data on variety performance. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for making variety choices than trials with higher C.V. rates. Trials with C.V. rates of 15-20% or less may be considered reliable.

OIL CONTENT

Among varieties with similar yield potential, select the one with the highest oil content. It does not pay to sacrifice yield for oil content, however.

MATURITY

Later-maturing varieties generally will produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding, only an early variety will mature properly and exhibit its best yield potential and oil content.

DISEASE RESISTANCE

The two most serious flax diseases are wilt and rust. Currently, all commercially grown flax varieties are resistant to race 371 of the flax rust pathogen Melampsora lini. This is the most common naturally occurring rust race in North America. Flax wilt is caused by Fusarium oxysporum f. sp. lini, a soil-borne pathogen that can infect plants at any stage of development. It may cause wilting and death of seedlings or older plants, stunting, loss of vigor, and reduced yield. Flax varieties differ in their resistance to flax wilt. If flax is grown in a field with a history of wilt, a wilt-resistant variety should be selected. A fungicide seed treatment will provide early protection to infection by seed-borne and soil-borne organisms that cause seedling blight and damping-off.

SEED AVAILABILITY AND QUALITY

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high-quality seed with good germination. Certified seed is recommended to assure varietal purity, seed viability, and freedom from pathogens and weed seed.

2009 TRIAL PROCEDURES

A yield trial of flax varieties and experimental lines from South Dakota, North Dakota, and Canada was grown at Brookings, S.D., in 2009. The purpose of the trial was to provide performance data on released flax varieties to producers and compare performance of experimental lines to established checks in order to identify possible new varieties.

In 2009, five experimental lines from the NDSU or Canadian flax breeding programs were tested against 17 released varieties. The trial was planted on May 19, 2009. The previous crop was oats. Experiment design was a randomized complete block with three replications. Plots consisted of seven rows 20 ft. long, with rows spaced 7 inches apart. Plots were harvested by cutting the middle three rows of each plot with a bundle cutter, then drying and threshing the bundles. Oil content was determined with a Bruker minispec NMR on oven-dried 35 ml seed samples from each plot. Oil contents were adjusted to 10% moisture basis.

Table 1 shows 2009, 2-, and 3-year average yield, oil, flowering, and height data for flax grown at Brookings, S.D. Table 2 summarizes the characteristics of the varieties included in the performance trials. Yields at Brookings in 2009 averaged 26.7 bu/acre with 39.7% oil.

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EXEX8055 Access at http://agbiopubs.sdstate.edu/articles/ExEx8055.pdf.

Table 1. 2009 Flax Variety Trial, Brookings, S.D.

Variety	Origin -Year-	Seed Yield			Oil			Flower		Plant Height		
		2009	2-yr	3-yr	2009	2-yr	3-yr	2009	2-yr	2009	2-yr	3-yr
		(bu/ac)			(%)			(days)		(inches)		
AC Hanley	CAN-02	26.1	21.1	19.2	38.5	38.2	38.8	52	52	23.2	21.4	19.7
Bison	ND-27	28.2	19.8	19.9	38.7	38.3	39.0	47	49	23.6	22.4	20.6
Carter	ND-05	26.4	19.9	19.1	39.9	39.2	39.8	52	54	24.4	23.4	21.1
CDC Arras	CAN-00	19.4	18.3	17.1	39.4	38.9	39.4	51	53	24.8	23.4	21.2
CDC Bethune	CAN-00	19.5	16.9	16.5	39.2	38.7	39.4	51	53	25.2	24.1	21.7
CDC Sorrel	CAN-07	25.8	20.2	–	38.8	38.8	–	53	55	27.2	24.8	--
Linott	CAN-66	23.2	19.1	18.7	38.5	38.6	39.4	50	53	24.0	23.3	21.1
McGregor	CAN-82	25.4	21.2	20.2	38.2	38.0	38.6	53	54	24.0	23.0	21.1
Nekoma	ND-02	28.9	21.8	20.4	39.2	39.3	40.3	51	52	24.4	23.0	20.5
Omega	ND-90	23.3	19.2	18.8	40.7	39.9	40.5	49	51	20.9	20.4	19.1
Pembina	ND-97	28.0	22.5	19.6	39.0	39.0	39.7	53	53	25.2	23.4	21.3
Prairie Blue	CAN-03	31.8	23.8	21.4	40.1	39.9	40.5	53	53	26.4	23.4	21.1
Prairie Grande	CAN-08	24.8	20.3	--	41.0	39.9	–	46	48	19.3	18.9	--
Prairie Thunder	CAN-08	32.6	25.1	22.2	39.9	39.5	40.0	50	50	21.3	20.5	19.0
Rahab 94	SD-94	30.8	23.1	20.0	39.6	39.3	40.2	52	53	24.4	22.1	19.8
Selby	SD-00	32.7	23.5	21.6	39.0	38.8	39.8	52	54	24.4	23.1	21.3
Webster	SD-98	28.5	23.2	20.6	39.3	39.4	40.2	53	54	27.6	25.7	23.2
Experimentals												
A603	ND-exp.	23.9	18.4	--	39.3	38.7	–	51	54	23.6	21.7	–
FP2188	CAN-exp.	24.1	22.5	--	43.3	43.0	–	48	50	22.8	22.8	–
FP2214	CAN-exp.	24.4	21.4	--	42.1	41.8	–	49	51	24.0	22.0	–
N06 2055	ND-exp.	30.9	26.4	--	39.4	39.7	–	53	54	25.2	24.4	–
N06 2059	ND-exp.	27.9	20.2	--	40.2	40.0	–	52	54	27.6	25.0	–
Mean		26.7	21.3	19.7	39.7	39.4	39.7	51.0	52	24.2	22.8	20.8
LSD .05		ns[1]	4.2	3.0	0.6	0.6	0.5	1.1	1	2.1	1.6	1.1
C.V.		16.5	17.2	16.2	0.9	1.3	1.3	1.3	1.6	5.3	6.2	5.7

1 ns indicates that differences among the varieties were not statistically significant.

Seeding dates: 2009 – May 19th; 2008 – May 8th; 2007 – no trial; 2006 – April 26th

EXEX8055 Access at http://agbiopubs.sdstate.edu/articles/ExEx8055.pdf.

Table 2. Flax Variety Characteristics

Variety	Origin -Year-	2-yr Days to Flower	Seed Size	Color		Disease[1] Resistance	
				Flower	Seed	Wilt	Rust
AC Hanley	CAN-02	52	Med-Sm	Blue	Brown	MR	R
Bison	ND-27	49	Med-Lrg	Blue	Brown	MR	S
Carter	ND-05	54	Med-Sm	Blue	Yellow	MS	R
CDC Arras	CAN-00	53	Med-Lrg	Blue	Brown	R	R
CDC Bethune	CAN-00	53	Medium	Blue	Brown	MR	R
CDC Sorrel	CAN-07	55	Med-Lrg	Blue	Brown	MR	R
Linott	CAN-66	53	Medium	Blue	Brown	MS	R
McGregor	CAN-82	54	Small	Blue	Brown	MR	R
Nekoma	ND-02	52	Med-Sm	Blue	Brown	S	R
Omega	ND-90	51	Medium	Blue	Yellow	MS	R
Pembina	ND-97	53	Large	Blue	Brown	R	R
Prairie Blue	CAN-03	53	Small	Blue	Brown	MR	R
Prairie Grande	CAN-08	48	Medium	Blue	Brown	MR	R
Prairie Thunder	CAN-08	50	Medium	Blue	Brown	R	R
Rahab 94	SD-94	53	Medium	Blue	Brown	MR	R
Selby	SD-00	54	Medium	Blue	Brown	MR	R
Webster	SD-98	54	Med-Lrg	Blue	Brown	MR	R
Experimentals							
A603	ND-exp.	54	Med-Sm	Blue	Brown	--	--
FP2188	CAN-exp.	50	Medium	Blue	Brown	--	R
FP2214	CAN-exp.	51	Medium	Blue	Brown	MR	R
N06 2055	ND-exp.	54	Large	Blue	Yellow	--	--
N06 2059	ND-exp.	54	Large	Blue	Yellow	--	--

[1] R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible.

EXEX8055 Access at http://agbiopubs.sdstate.edu/articles/ExEx8055.pdf.

EC 909
Revised
Annually

SUNFLOWER

2010 South Dakota Hybrid Performance Trials

OILSEED

Cconfection

COOPERATIVE EXTENSION SERVICE • SOUTH DAKOTA STATE UNIVERSITY • U.S. DEPARTMENT OF AGRICULTURE

List of Tables

South Dakota
Cooperative Extension Service

EC909-10: January 2011

SUNFLOWER

2010 South Dakota Hybrid Performance Trials
Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Presho oilseed test (table 7) could be repeated in 2011 exactly as it was in 2010, the yield ranking of a hybrid that yielded 2203 lbs/A and one that yielded 2034 lbs/A might change places, since their yield difference (169 lbs/A) is less than the indicated yield LSD value of 239 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Presho in 2010. In contrast, a hybrid that yielded 1913 lbs/A at Presho in 2010 would likely be lower yielding than one that yielded 2203 lbs/A if the two hybrids were grown again under similar conditions, because the difference between them in 2010 (2203 – 1913 = 290 lbs/A) exceeded the LSD value of 239 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15–20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed-crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with "traditional" (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content, and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20–25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of 4 years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to the aforementioned and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2010 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Bison, Eureka, Onida, and Presho). Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, and high-oleic hybrids. A non-oilseed (confection) sunflower trial was conducted at Onida. Test locations are indicated on the map in figure 1. Trial sites for each of the hybrids tested in 2010 appear in tables 2 and 3.

Climate

A summary of climate conditions near the sunflower test sites is presented in table 1. The 2010 growing season began with above-normal precipitation and below-normal temperatures in May at all locations except Presho, which had near normal May rainfall. June was drier than normal at Bison and Eureka but wetter than normal at Onida and Presho. Eureka remained drier and warmer than normal through August, but was cooler and wetter than the 30-yr average in September. Bison had above-average rainfall July through September. Onida had below-normal precipitation in July and August but was cooler and wetter in September. Presho was wetter than normal in July, but drier than usual August through October. October was warmer and drier than normal at all sites, which facilitated crop drydown even though the first killing frost (<24°F) did not occur until October 28, which was later than normal for all locations.

Experimental Methods

Plots at all locations consisted of four rows 30-feet long, spaced 30-inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. The previous crop at Eureka was corn; at Bison, Presho, and Onida, it was wheat. Plots were over-seeded and thinned to a plant population of approximately 17,000 plants/acre. Stands were spotty at Eureka, so stand counts were made prior to harvest. Initial stands were good at Presho, Bison, and Onida, but Presho had a fair number of seedlings systemically infected with downy mildew. These plants were preferentially removed at thinning.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Days from planting to physiological maturity (rated visually) was also recorded at Onida. Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was low at Bison and Presho for most hybrids. Onida and Eureka had extensive lodging in some plots, and Eureka also had considerable neck breakage due to high winds. The combination of poor stands, lodging, and neck breakage made the yield data at Eureka highly variable, so only

entries with adequate stands and relatively low levels of lodging and neck breakage were included in the yield analysis. Confection plot yields at Onida were also variable due to lodging and seed shatter, so no yield data are reported.

Plots at Onida and Presho were harvested with a Kincaid Massey Ferguson plot combine fitted with sunflower pans and a HarvestMaster HM400 Classic GrainGage weigh system. Plots at Eureka were harvested with the USDA-ARS sunflower research unit's Kincaid 8XP plot combine fitted with a custom 2-row sunflower header and an HM800 high-capacity GrainGage weigh system. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGauge. Seed yields were adjusted to a 10% moisture basis. Oil content was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens.

A 1-pint subsample of seed from each plot of the Onida confection trial was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in tables 4–9. Yields of oilseed hybrids were highest at Presho, averaging 1792 lbs/acre over all hybrids tested, with an average oil content of 46.0%. The lowest overall yield was measured at Eureka, which averaged 1475 lbs/acre and 46.4% oil for hybrids with adequate stands and fairly low levels of lodging and neck breakage. Confection seed yields at Onida were too variable for publication, but other data collected appear in table 8. In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

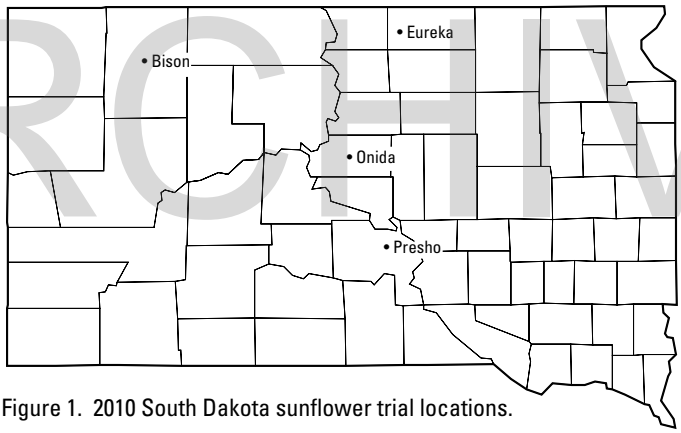

Figure 1. 2010 South Dakota sunflower trial locations.

Table 1. Climate summary for weather stations nearest to 2010 South Dakota sunflower test sites and departures from normal.

Location-Month	2010 Temperature			Total Precip (in.)	Departure from Normal[1]			
	Avg Max.	Avg Min.	Mean		Max Temp	Min Temp	Avg Temp	Precip (in.)
	----------(°F)----------				----------(°F)--------			
Bison*								
May	63.8	41.3	52.6	5.58	-5.7	-2.4	-4.0	2.86
June	75.8	52.5	64.2	2.18	-3.1	-0.5	-1.8	-0.64
July	86.0	57.5	71.8	2.90	0.0	-0.9	-0.4	0.63
August	86.8	58.3	72.6	2.70	0.6	1.4	1.0	1.23
September	74.4	46.1	60.2	2.81	-0.4	-0.4	-0.5	1.61
October	66.4	38.9	52.7	0.77	5.9	3.6	4.8	-0.69
Eureka*								
May	64.2	45.1	54.6	5.65	-5.6	1.5	-2.1	3.02
June	77.7	55.5	66.6	1.51	-0.5	2.6	1.0	-1.66
July	85.4	59.9	72.7	1.45	0.7	1.9	1.3	-1.33
August	87.3	59.8	73.5	0.12	3.5	3.6	3.5	-2.18
September	69.1	46.2	57.6	3.57	-4.2	0.8	-1.8	2.14
October	62.5	36.6	49.6	0.83	3.4	3.0	3.2	-0.83
Onida 4 NW*								
May	65.2	44.2	54.7	4.10	-5.2	-0.1	-2.7	1.25
June	77.2	55.7	66.5	3.87	-3.0	2.1	-0.4	0.76
July	86.4	60.0	73.2	1.97	-1.2	1.2	0.0	-0.72
August	89.2	60.9	75.1	0.73	3.4	3.9	3.7	-1.41
September	72.7	47.4	60.0	3.51	-3.3	1.1	-1.2	1.97
October	64.4	38.6	51.5	0.96	3.2	4.1	3.6	-0.62
Presho 7NW*								
May	68.7	44.8	56.7	3.22	-3.6	0.4	-1.7	-0.09
June	79.7	56.7	68.2	5.70	-2.5	2.9	0.2	2.19
July	88.2	62.0	75.1	3.83	-1.1	2.4	0.7	1.14
August	91.2	61.6	76.4	0.00	2.5	3.8	3.1	-2.28
September	75.9	47.4	61.7	0.00	-2.3	0.2	-1.0	-1.49
October	69.7	37.8	53.7	0.00	6.1	2.9	4.4	-1.51

*2010 climate observations are based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2010 observations to 30-yr averages (1971 – 2000) for each site.

Table 2. Oilseed sunflower hybrids tested in South Dakota - 2010.

Company/ Brand	Hybrid	Hybrid Type[1]	Location			
			Bison	Eureka	Onida	Presho
Advanta	NutriSun HS03	HS,HO	X	X	X	X
Advanta US Inc	ADV590	NS		X	X	
Advanta US Inc	F51137NS,CL	NS,CL			X	
Advanta US Inc	F89057NS,SU	NS,Exp			X	
Croplan Genetics	306 DMR NS	NS,DM	X	X	X	X
Croplan Genetics	3080 DMR NS	NS,DM	X	X	X	X
Croplan Genetics	356A NS	NS	X	X	X	X
Croplan Genetics	378 DMR HO	HO,DM	X	X	X	X
Croplan Genetics	460 E NS	NS,Exp	X	X	X	X
Croplan Genetics	555 CL DMR NS	NS,CL,DM	X	X	X	X
Croplan Genetics	559 CL DMR NS	NS,CL,DM	X	X	X	X
Dahlgren & Co.	4421				X	
King Seed Inc.	SunKing 3909 NSCL	NS,CL	X	X	X	X
King Seed Inc.	SunKing 4404 NSCL	NS,CL	X	X	X	X
Mycogen Seeds	8D481	NS	X	X	X	X
Mycogen Seeds	8H288CLDM	HO,CL,DM		X	X	
Mycogen Seeds	8H449DM	HO,DM		X	X	X
Mycogen Seeds	8N270CLDM	NS,CL,DM		X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X	X	X
Mycogen Seeds	8N421CLDM	NS,CL,DM		X	X	X
Mycogen Seeds	8N433DM	NS,DM		X	X	X
Mycogen Seeds	8N453DM	NS,DM	X	X	X	X
Mycogen Seeds	8N510	NS	X	X	X	X
Pannar Seed, Inc	PAN7813 NS	NS		X	X	X
Pannar Seed, Inc	PAN7924 NS	NS		X	X	X
Pannar Seed, Inc	PAN8560 NS/CL	NS,CL		X	X	X
Pannar Seed, Inc	PAN9501	Trad.		X	X	X
Pannar Seed, Inc	PEX7803	HO		X	X	X
Pannar Seed, Inc	PEX7904	HO		X	X	X
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	X	X	X	X
ProSun	SK-4510	NS,CL	X	X	X	
ProSun	SK-4610	NS,CL	X	X	X	
ProSun	SK-4810	NS,CL	X	X	X	
ProSun	SK-4910	NS,CL	X	X	X	
Seeds 2000	Badger	ConOil,CL	X	X	X	
Seeds 2000	Blazer CL	NS,CL	X	X	X	
Seeds 2000	Firebird	NS,Exp	X	X	X	
Seeds 2000	Sierra	HO	X	X	X	
Seeds 2000	X9464	HO,CL	X	X	X	
Seeds 2000	X9866	NS,CL	X	X	X	

Table 2. Oilseed sunflower hybrids tested in South Dakota - 2010. (Continued)

Company/ Brand	Hybrid	Hybrid Type[1]	Location			
			Bison	Eureka	Onida	Presho
Syngenta	3732 NS	NS	X	X	X	X
Syngenta	3845 HO	HO	X	X	X	X
Syngenta	3875 NS	NS	X	X	X	X
Syngenta	3980 NS/CL	NS,CL	X	X	X	X
Syngenta	4596 HO/DM	HO,DM	X	X	X	X
Syngenta	4651 NS/DM	NS,DM	X	X	X	X
Technology Crops	OL535	HO	X	X	X	X
Technology Crops	OL555	HO	X	X	X	X
Triumph Seed Co., Inc	845HO	HO		X	X	
Triumph Seed Co., Inc	s655	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s668	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s671	NS,SS	X	X		X
Triumph Seed Co., Inc	s674	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s678	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s870HCL	HO,CL,SS	X	X	X	X
Triumph Seed Co., Inc	s878	HO,SS		X	X	X
Triumph Seed Co., Inc	810HCLD	HO,DM,CL		X		
Triumph Seed Co., Inc	610CLD	NS,DM,CL		X		
Triumph Seed Co., Inc	s673	NS,SS	X	X	X	X
Triumph Seed Co., Inc	TRXs9422	NS,SS	X	X	X	X
USDA	894 (check)	Trad.	X	X	X	X

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Stearic.

Table 3. Confection sunflower hybrids tested in South Dakota - 2010.

Company/ Brand	Hybrid	Hybrid Type[1]	Onida
CHS	RH 400CL	Conf./CL	X
Croplan Genetics	179	Conf.	X
Dahlgren & Co.	9530	Conf.	X
Dahlgren & Co.	9592	Conf.	X
Dahlgren & Co.	9579	Conf.	X
Dahlgren & Co.	9569	Conf.	X
Dahlgren & Co.	9530CL	Conf.	X
Mycogen Seeds	8C451	Conf.	X
Red River Commodities	RRC 2215 CL	Conf./CL	X
Red River Commodities	RRC 2215	Conf.	X
Red River Commodities	RRC 2217	Conf.	X
Seeds 2000	Jaguar	Conf./CL	X
Seeds 2000	Panther II	Conf.	X
Triumph Seed Co., Inc	770CL	Conf./CL	X
USDA	924 (check)	Conf.	X

[1]Type: Conf. = Confection, CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature.

Table 4. 2010 - Sunflower - Oilseed - Bison, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield 2010	Seed Yield 2-yr Avg.	Seed Yield 3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			---------(lb/a)---------							
Advanta	NutriSun HS03	HS,HO	1322	--	--	41.6	61	3	31.7	16.1
Croplan Genetics	306 DMR NS	NS,DM	1703	1323	1505	46.2	62	1	28.5	16.2
Croplan Genetics	3080 DMR NS	NS,DM	1899	1464	1645	46.6	62	3	28.1	16.4
Croplan Genetics	356A NS	NS	2019	1464	--	45.5	59	0	32.0	16.4
Croplan Genetics	378 DMR HO	HO,DM	1579	--	--	42.7	67	3	27.7	17.1
Croplan Genetics	460 E NS	NS,Exp	1444	1041	--	48.1	65	3	30.0	17.1
Croplan Genetics	555 CL DMR NS	NS,CL,DM	1280	995	--	43.4	63	3	27.6	17.1
Croplan Genetics	559 CL DMR NS	NS,CL,DM	1573	--	--	47.2	67	1	29.6	14.5
King Seed Inc.	SunKing 3909 NSCL	NS,CL	1395	--	--	43.1	63	3	28.4	16.5
King Seed Inc.	SunKing 4404 NSCL	NS,CL	1686	1259	1588	42.8	64	1	29.0	17.5
Mycogen Seeds	8D481	NS	1836	--	--	43.8	67	0	29.0	16.7
Mycogen Seeds	8N358CLDM	NS,CL,DM	1502	1280	1480	46.8	64	2	30.4	16.8
Mycogen Seeds	8N453DM	NS,DM	2145	--	--	49.0	64	1	31.3	15.9
Mycogen Seeds	8N510	NS	1682	1474	1512	46.0	60	1	27.7	14.8
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	1640	--	--	44.9	62	1	25.3	16.4
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	1613	1298	--	46.1	64	0	29.2	17.2
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	1637	--	--	45.3	59	2	30.5	15.6
ProSun	SK-4510	NS,CL	1549	--	--	43.1	62	2	29.4	17.3
ProSun	SK-4610	NS,CL	1904	--	--	45.4	64	0	31.8	16.3
ProSun	SK-4810	NS,CL	1868	--	--	43.5	59	1	30.2	16.4
ProSun	SK-4910	NS,CL	1691	--	--	43.0	64	0	29.8	15.2
Seeds 2000	Badger	ConOil,CL	1503	--	--	40.3	68	2	28.9	15.6
Seeds 2000	Blazer CL	NS,CL	1784	--	--	45.4	64	3	27.8	17.0
Seeds 2000	Firebird	NS,Exp	1751	--	--	45.1	61	0	29.0	16.9
Seeds 2000	Sierra	HO	1665	--	--	44.5	62	0	27.8	15.8
Seeds 2000	X9464	HO,CL	1101	--	--	44.5	65	3	28.9	16.7
Seeds 2000	X9866	NS,CL	1603	--	--	43.6	64	0	26.5	15.6
Syngenta	3732 NS	NS	1996	1408	--	46.0	59	0	31.9	17.6
Syngenta	3845 HO	HO	1899	1385	1578	47.4	59	2	29.7	16.6
Syngenta	3875 NS	NS	2115	1471	1651	44.7	57	4	30.0	15.9
Syngenta	3980 NS/CL	NS,CL	1937	1290	1415	43.8	68	0	28.7	16.1
Syngenta	4596 HO/DM	HO,DM	1492	--	--	44.2	68	5	28.1	17.9
Syngenta	4651 NS/DM	NS,DM	1719	--	--	44.6	69	1	28.1	15.4
Technology Crops	OL535	HO	1571	--	--	44.4	64	2	28.1	15.9
Technology Crops	OL555	HO	1792	--	--	44.0	65	4	26.9	16.5

Table 4. 2010 - Sunflower - Oilseed - Bison, SD (Continued)

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield 2010	Seed Yield 2-yr Avg.	Seed Yield 3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			---------(lb/a)---------							
Triumph Seed Co.	s655	NS,SS	1731	1321	--	46.4	38	0	31.4	16.7
Triumph Seed Co.	s668	NS,SS	2401	--	--	45.5	48	0	29.0	15.1
Triumph Seed Co.	s671	NS,SS	2405	1795	1856	45.4	46	0	28.7	15.9
Triumph Seed Co.	s674	NS,SS	2086	1694	--	46.5	44	0	28.5	14.9
Triumph Seed Co.	s678	NS,SS	2405	1745	1758	46.2	57	0	29.1	15.1
Triumph Seed Co.	s870HCL	HO,CL,SS	2038	--	--	44.4	44	0	28.3	14.2
Triumph Seed Co.	s673	NS,SS	2125	--	--	42.1	54	0	28.9	15.5
Triumph Seed Co.	TRXs9422	NS,SS	2076	1402	--	47.3	45	0	29.0	15.8
USDA	USDA 894 (check)	Trad.	1351	985	1021	46.5	59	0	31.2	15.6
Grand Mean			1762	1373	1546	44.9	60	1	29.1	16.2
LSD 5%			348	235	229	2.0	4	3	1.8	1.7
C.V. %			14.1	16.1	17.5	3.3	4.8	149	4.4	7.7

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Stearic.
Yield is reported at harvest moisture.
Planted June 10, 2010. Harvested Nov. 1, 2010. Previous crop = wheat.

Table 5. 2010 - Sunflower - Oilseed - Eureka, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2010	Seed Yield[2] 2-yr Avg.	Seed Yield[2] 3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Neck[3] Break (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			-------(lb/a)--------									
Advanta	NutriSun HS03	HS,HO	--	--	--	40.6	43	17	0	9.0	29.6	19.2
Advanta US Inc	ADV590	NS	--	--	--	45.5	46	23	7	9.1	26.7	15.5
Croplan Genetics	306 DMR NS	NS	1292	1541	1728	47.2	48	3	1	9.0	28.7	20.7
Croplan Genetics	3080 DMR NS	NS	1424	1925	1894	49.4	48	1	1	7.2	28.1	19.1
Croplan Genetics	356A NS	NS	1457	2114	--	46.4	46	8	2	9.8	30.6	16.7
Croplan Genetics	378 DMR HO	HO	--	--	--	45.6	60	37	7	9.7	28.8	11.4
Croplan Genetics	460 E NS	NS,Exp	--	--	--	47.8	52	9	31	7.4	27.9	20.9
Croplan Genetics	555 CL DMR NS	NS,CL	--	--	--	45.6	53	33	2	7.5	26.5	17.8
Croplan Genetics	559 CL DMR NS	NS,CL	--	--	--	48.5	46	4	12	8.9	29.5	17.6
King Seed Inc.	SunKing 3909 NSCL	NS,CL	--	--	--	46.9	46	2	19	7.9	29.8	19.3
King Seed Inc.	SunKing 4404 NSCL	NS,CL	--	--	--	43.5	49	19	2	8.3	29.0	18.0
Mycogen Seeds	8D481	NS	--	--	--	43.9	55	21	7	7.7	29.9	19.2
Mycogen Seeds	8H288CLDM	HO,CL	--	--	--	49.7	49	18	0	7.1	29.4	13.1
Mycogen Seeds	8H449DM	HO	--	--	--	48.0	51	51	4	7.6	30.7	13.6
Mycogen Seeds	8N270CLDM	NS,CL	1186	--	--	47.6	57	1	1	6.6	30.8	19.2
Mycogen Seeds	8N358CLDM	NS,CL	1302	1714	1827	48.4	52	8	2	8.5	29.4	19.4
Mycogen Seeds	8N421CLDM	NS,CL	--	--	--	46.6	54	5	13	8.7	29.1	19.0
Mycogen Seeds	8N433DM	NS	--	--	--	49.7	53	13	8	8.4	27.8	20.1
Mycogen Seeds	8N453DM	NS	--	--	--	50.7	48	43	2	8.7	30.6	19.0
Mycogen Seeds	8N510	NS	--	--	--	44.0	52	24	2	7.8	27.6	13.9
Pannar Seed, Inc	PAN7813 NS	NS	--	--	--	47.5	50	25	6	11.5	29.0	14.8
Pannar Seed, Inc	PAN7924 NS	NS	--	--	--	45.6	49	17	22	9.8	28.4	17.4
Pannar Seed, Inc	PAN8560 NS/CL	NS,CL	1133	--	--	43.5	56	9	0	9.2	28.0	20.7
Pannar Seed, Inc	PAN9501	Trad.	1279	--	--	43.9	55	3	5	9.1	30.7	21.1
Pannar Seed, Inc	PEX7803	HO	--	--	--	47.9	44	9	2	11.4	29.9	12.8
Pannar Seed, Inc	PEX7904	HO	--	--	--	45.4	52	3	4	13.3	28.1	10.3
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	--	--	--	47.5	50	23	2	7.6	27.0	18.5
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	1368	1767	--	47.9	53	5	2	9.4	30.2	20.1
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	1181	--	--	47.7	53	6	2	7.8	31.4	21.0
ProSun	SK-4510	NS,CL	--	--	--	43.7	44	0	21	9.2	30.0	13.3
ProSun	SK-4610	NS,CL	--	--	--	45.5	44	6	3	9.0	30.8	18.4
ProSun	SK-4810	NS,CL	1613	--	--	45.2	48	2	2	11.1	29.2	18.1
ProSun	SK-4910	NS,CL	1139	--	--	43.8	50	8	1	9.0	27.7	18.9
Seeds 2000	Badger	ConOil,CL	--	--	--	39.3	46	8	0	7.4	27.7	11.9
Seeds 2000	Blazer CL	NS,CL	--	--	--	47.4	48	33	1	9.9	28.7	16.7
Seeds 2000	Firebird	NS,Exp	1704	1991	2086	44.7	42	9	0	12.6	26.9	18.2
Seeds 2000	Sierra	HO	--	--	--	43.1	45	15	8	10.9	26.2	17.1
Seeds 2000	X9464	HO,CL	--	--	--	43.9	51	3	27	10.2	28.8	15.1
Seeds 2000	X9866	NS,CL	--	--	--	46.1	60	15	5	9.8	28.2	16.7
Syngenta	3732 NS	NS	1652	2079	--	48.3	50	6	1	10.9	31.8	18.8

Table 5. 2010 - Sunflower - Oilseed - Eureka, SD (Continued)

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2010	2-yr Avg.	3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Neck[3] Break (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			-------(lb/a)--------									
Syngenta	3845 HO	HO	--	--	--	49.2	54	29	4	7.3	31.1	17.1
Syngenta	3875 NS	NS	--	--	--	47.5	58	56	0	7.1	30.8	14.6
Syngenta	3980 NS/CL	NS,CL	1169	1696	1758	44.1	54	13	0	9.5	28.6	19.3
Syngenta	4596 HO/DM	HO	--	--	--	45.1	56	35	11	9.6	28.0	14.8
Syngenta	4651 NS/DM	NS	--	--	--	44.6	58	20	0	9.5	29.0	18.3
Technology Crops	OL535	HO	--	--	--	46.2	61	50	1	7.0	26.7	18.3
Technology Crops	OL555	HO	--	--	--	47.7	56	29	0	8.0	28.0	13.5
Triumph Seed Co.	845HO	HO	--	--	--	48.1	58	12	5	11.7	26.5	16.9
Triumph Seed Co.	s655	NS,SS	1705	2071	2133	46.3	35	7	0	10.3	28.8	19.5
Triumph Seed Co.	s668	NS,SS	1750	--	--	45.9	37	2	0	17.4	28.2	17.0
Triumph Seed Co.	s671	NS,SS	--	--	--	46.1	39	1	1	11.2	28.2	13.2
Triumph Seed Co.	s674	NS,SS	1975	2437	--	46.8	38	3	0	13.2	28.5	16.0
Triumph Seed Co.	s678	NS,SS	1624	2209	2233	46.8	39	2	1	13.3	28.4	14.4
Triumph Seed Co.	s870HCL	HO,CL,SS	--	--	--	46.7	39	3	0	11.3	27.7	10.2
Triumph Seed Co.	s878	HO,SS	1623	2162	2207	49.0	39	10	1	12.0	27.7	15.9
Triumph Seed Co.	810HCLD	HO,CL	1043	--	--	47.8	52	6	5	8.5	28.2	15.4
Triumph Seed Co.	610CLD	NS,CL	--	--	--	47.2	50	10	7	8.0	27.6	17.5
Triumph Seed Co.	s673	NS,SS	2230	--	--	45.5	42	0	0	15.0	27.4	19.0
Triumph Seed Co.	TRXs9422	NS,SS	1866	2118	--	47.5	32	4	0	12.9	29.1	16.5
USDA	USDA 894 (check)	Trad.	1207	1725	1701	49.8	43	8	2	9.3	30.2	15.0
Grand Mean			1475	1968	1952	46.4	49	14	5	9.6	28.8	16.9
LSD 5%			409	353	263	2.3		22	8	1.9	1.4	6.1
C.V. %			19.6	18.2	16.8	3.5		114	128	14.3	3.6	25.7

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Saturated Fat.
[2]Yield is reported only for hybrids with adequate stands and relatively low levels of lodging and neck breakage.
[3]Neck break is the percentage of standing plants with heads completely broken off at the neck.
Yield is reported at 10% moisture.
Planted June 16, 2010. Harvested Nov. 8–9, 2010. Previous crop = corn.

Table 6. 2010 Sunflower - Oilseed - Onida, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Days to Flwr	Mat.	Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)	Hulling[2] Screen Test
			2010	2-yr Avg.	3-yr Avg.									
			-------(lb/a)-------				---(days)---							
Advanta	NutriSun HS03	HS,HO	1232	--	--	38.3	62	95	74	24	7.6	28.0	17.3	NT
Advanta US Inc	ADV590	NS	1189	--	--	41.6	60	90	75	21	7.1	25.2	17.6	NT
Advanta US Inc	F51137NS,CL	NS,CL	1014	--	--	42.9	64	95	70	30	8.4	28.8	17.7	NT
Advanta US Inc	F89057NS,SU	NS,Exp	931	--	--	43.2	65	97	76	18	8.5	29.5	17.4	NT
Croplan Genetics	306 DMR NS	NS,DM	1531	1863	1845	45.0	61	95	65	19	7.9	28.6	17.6	NT
Croplan Genetics	3080 DMR NS	NS,DM	1587	1943	1829	46.2	60	94	63	23	7.6	28.0	17.7	NT
Croplan Genetics	356A NS	NS	2187	2207	--	46.2	63	97	67	11	8.9	30.9	17.8	NT
Croplan Genetics	378 DMR HO	HO,DM	1646	--	--	44.3	62	96	72	21	8.7	28.5	18.2	NT
Croplan Genetics	460 E NS	NS,Exp	1182	1743	--	48.0	65	98	73	31	7.8	28.2	17.5	NT
Croplan Genetics	555 CL DMR NS	NS,CL,DM	1432	1681	--	43.9	64	96	78	28	7.6	28.9	18.0	NT
Croplan Genetics	559 CL DMR NS	NS,CL,DM	1878	--	--	45.5	65	98	76	16	8.1	29.2	16.4	NT
Dahlgren & Co.	4421		1523	--	--	38.9	60	91	74	26	7.5	26.8	17.3	NT
King Seed Inc.	SunKing 3909 NSCL	NS,CL	1117	--	--	42.3	61	91	69	30	7.7	27.9	17.7	Excel
King Seed Inc.	SunKing 4404 NSCL	NS,CL	1314	1630	1605	41.4	var.	var.	var.	32	8.5	29.5	18.0	Excel
Mycogen Seeds	8D481	NS	1982	2011	2038	42.1	63	98	71	14	7.9	30.7	17.0	NT
Mycogen Seeds	8H288CLDM	HO,CL,DM	1481	1845	--	45.4	58	95	69	27	8.0	29.6	17.8	NT
Mycogen Seeds	8H449DM	HO,DM	1815	1921	1936	50.1	63	98	70	14	8.4	32.8	17.4	NT
Mycogen Seeds	8N270CLDM	NS,CL,DM	1444	--	--	41.4	58	91	69	26	7.8	31.2	17.7	NT
Mycogen Seeds	8N358CLDM	NS,CL,DM	1699	1812	1752	46.8	61	96	76	18	7.9	29.3	17.8	NT
Mycogen Seeds	8N421CLDM	NS,CL,DM	1672	--	--	46.4	63	97	71	11	8.4	30.4	17.5	NT
Mycogen Seeds	8N433DM	NS,DM	1538	1833	--	48.9	63	96	72	40	7.9	29.8	17.8	NT
Mycogen Seeds	8N453DM	NS,DM	1874	2012	1999	50.1	62	96	73	16	8.4	30.2	17.2	NT
Mycogen Seeds	8N510	NS	1793	2033	2047	44.1	64	97	68	25	7.9	28.2	17.8	NT
Pannar Seed, Inc	PAN7813 NS	NS	1594	1885	1812	44.9	64	96	67	16	8.3	29.1	17.8	NT
Pannar Seed, Inc	PAN7924 NS	NS	1685	1959	2010	43.7	64	97	71	20	8.0	28.5	17.8	NT
Pannar Seed, Inc	PAN8560 NS/CL	NS,CL	1362	--	--	40.9	var.	var.	var.	19	8.2	28.4	17.5	NT
Pannar Seed, Inc	PAN9501	Trad.	1531	--	--	42.5	64	99	74	19	8.2	32.5	16.9	NT
Pannar Seed, Inc	PEX7803	HO	1876	2074	--	45.0	63	96	67	10	8.0	27.4	17.6	NT
Pannar Seed, Inc	PEX7904	HO	1764	1977	--	45.4	63	96	71	18	8.2	27.7	17.6	NT
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	1439	--	--	43.1	63	95	72	32	7.5	27.4	17.1	Excel
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	1892	2224	2080	45.5	63	96	69	7	7.9	31.5	17.3	Good
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	1413	--	--	44.8	61	97	76	25	9.3	31.1	17.0	Good
ProSun	SK-4510	NS,CL	1492	--	--	41.5	63	96	68	12	7.9	27.8	16.3	Excel
ProSun	SK-4610	NS,CL	997	--	--	43.7	64	97	75	39	8.4	31.8	17.3	Fail
ProSun	SK-4810	NS,CL	1061	--	--	43.2	64	95	65	16	8.0	26.1	17.2	Excel

Table 6. 2010 Sunflower - Oilseed - Onida, SD (Continued)

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Days to Flwr	Mat.	Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)	Hulling[2] Screen Test
			2010	2-yr Avg.	3-yr Avg.									
			-------(lb/a)-------				---(days)---							
ProSun	SK-4910	NS,CL	1322	--	--	41.0	66	var.	var.	25	8.6	30.3	17.6	Excel
Seeds 2000	Badger	ConOil,CL	1043	1642	--	36.8	63	94	81	27	7.8	27.0	18.3	NT
Seeds 2000	Blazer CL	NS,CL	1304	1706	1704	44.8	65	98	76	17	8.4	27.4	17.9	NT
Seeds 2000	Firebird	NS,Exp	1711	1800	1890	43.1	66	98	68	13	8.3	27.2	17.3	NT
Seeds 2000	Sierra	HO	1385	1627	1614	43.1	66	102	70	15	8.4	26.8	17.5	NT
Seeds 2000	X9464	HO,CL	1267	--	--	42.2	66	100	81	12	8.1	26.5	17.9	NT
Seeds 2000	X9866	NS,CL	1191	--	--	42.9	64	97	75	24	8.1	27.2	17.7	NT
Syngenta	3732 NS	NS	1919	2083	--	45.7	64	96	71	24	8.5	29.7	17.2	NT
Syngenta	3845 HO	HO	2071	1985	1962	45.9	62	95	68	20	7.6	29.0	17.6	NT
Syngenta	3875 NS	NS	2065	2141	2101	43.4	64	97	77	20	7.8	28.1	17.9	NT
Syngenta	3980 NS/CL	NS,CL	1373	1668	1517	42.8	66	var.	var.	23	8.3	28.3	17.3	NT
Syngenta	4596 HO/DM	HO,DM	1447	--	--	44.1	63	96	78	22	9.1	28.4	16.6	NT
Syngenta	4651 NS/DM	NS,DM	1091	--	--	43.6	63	97	74	23	8.6	29.7	17.2	NT
Technology Crops	OL535	HO	1378	--	--	41.7	63	94	76	20	7.6	26.1	17.7	NT
Technology Crops	OL555	HO	1691	--	--	43.5	63	96	77	21	7.4	28.7	17.8	NT
Triumph Seed Co.	845HO	HO	1325	1827	1939	48.9	63	96	70	13	8.2	27.5	17.6	NT
Triumph Seed Co.	s655	NS,SS	1708	1822	--	47.1	64	98	42	7	7.7	29.4	16.7	NT
Triumph Seed Co.	s668	NS,SS	2164	2293	2102	48.8	65	105	50	4	9.1	29.9	20.2	NT
Triumph Seed Co.	s674	NS,SS	1872	1803	--	50.9	68	105	52	5	8.1	28.8	16.5	NT
Triumph Seed Co.	s678	NS,SS	1871	1961	1969	48.8	66	103	59	14	9.0	29.6	18.4	NT
Triumph Seed Co.	s870HCL	HO,CL,SS	1902	--	--	48.4	66	101	53	10	7.9	28.4	16.4	NT
Triumph Seed Co.	s878	HO,SS	1499	1887	1844	48.9	65	101	63	14	9.0	29.3	17.9	NT
Triumph Seed Co.	s673	NS,SS	1625	--	--	46.9	67	102	55	18	8.1	28.9	20.0	NT
Triumph Seed Co.	TRXs9422	NS,SS	1815	1895	--	49.6	68	105	48	9	8.2	29.8	17.9	NT
USDA	USDA 894 (check)	Trad.	1279	1631	1652	45.3	61	92	62	25	7.3	28.4	16.2	NT
Grand Mean			1541	1895	1875	44.6	63	97	70	20	8.1	28.8	17.6	
LSD 5%			284	249	210	1.6	1	2	5	11	0.5	1.6	ns	
C.V. %			13.2	13.3	14.0	2.6	1.1	1.2	3.8	40.0	4.1	3.9	6.6	

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Stearic.
[2]Hulling screen test: Excel = > 65% of seed passes over a 14/64 screen; Good = > 75% of seed passes over a 13/64 screen; NT = not tested.
Yield is reported at 10% moisture.
Planted June 9, 2010. Harvested Oct. 30, 2010. Previous crop = wheat.

Table 7. 2010 - Sunflower - Oilseed - Presho, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2010	2-yr Avg.	3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			-------(lb/a)-------								
Advanta	NutriSun HS03	HS,HO	1691	--	--	38.9	57	1	5.9	29.9	16.6
Croplan Genetics	306 DMR NS	NS,DM	1544	1930	2068	46.1	62	6	5.6	28.5	16.4
Croplan Genetics	3080 DMR NS	NS,DM	1628	1794	1988	48.3	53	9	5.3	28.0	14.5
Croplan Genetics	356A NS	NS	2034	2104	--	47.1	61	8	5.9	28.5	17.1
Croplan Genetics	378 DMR HO	HO,DM	1555	--	--	44.6	69	6	5.6	28.0	16.4
Croplan Genetics	460 E NS	NS,Exp	1684	1794	--	48.8	65	11	5.8	27.1	15.4
Croplan Genetics	555 CL DMR NS	NS,CL,DM	1993	2049	--	45.0	72	10	5.7	27.3	16.8
Croplan Genetics	559 CL DMR NS	NS,CL,DM	1913	--	--	46.2	69	12	5.8	27.6	16.8
King Seed Inc.	SunKing 3909 NSCL	NS,CL	1704	--	--	44.2	58	7	5.8	27.5	17.3
King Seed Inc.	SunKing 4404 NSCL	NS,CL	1599	1834	2018	42.3	62	7	5.5	27.9	17.1
Mycogen Seeds	8D481	NS	1978	2130	2254	41.2	68	6	5.6	30.3	17.0
Mycogen Seeds	8H449DM	HO,DM	1869	1969	2054	49.0	65	9	6.2	30.0	17.4
Mycogen Seeds	8N270CLDM	NS,CL,DM	1542	--	--	43.8	65	9	5.4	28.1	15.5
Mycogen Seeds	8N358CLDM	NS,CL,DM	1650	1832	1953	45.8	67	6	5.2	26.0	16.9
Mycogen Seeds	8N421CLDM	NS,CL,DM	1694	--	--	46.0	64	4	5.7	28.2	16.8
Mycogen Seeds	8N433DM	NS,DM	1990	2088	--	47.3	68	6	5.4	26.3	17.5
Mycogen Seeds	8N453DM	NS,DM	1694	1981	2174	50.0	67	10	5.2	30.0	16.7
Mycogen Seeds	8N510	NS	1934	2410	2569	45.2	62	4	5.3	28.7	17.5
Pannar Seed, Inc	PAN7813 NS	NS	1946	2303	2350	46.0	62	6	6.3	29.1	16.5
Pannar Seed, Inc	PAN7924 NS	NS	1989	2103	2247	44.5	64	5	6.2	28.1	15.4
Pannar Seed, Inc	PAN8560 NS/CL	NS,CL	1595	--	--	41.7	66	5	6.1	28.5	16.5
Pannar Seed, Inc	PAN9501	Trad.	2160	--	--	42.7	65	2	6.0	30.6	17.3
Pannar Seed, Inc	PEX7803	HO	1674	2098	--	47.2	56	2	5.8	29.4	15.4
Pannar Seed, Inc	PEX7904	HO	1861	1973	--	46.7	57	4	5.8	28.8	16.0
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	1920	--	--	45.7	65	5	5.4	25.9	15.6
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	1574	1841	2086	45.2	65	4	5.4	30.6	17.0
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	1496	--	--	44.8	71	13	6.0	31.5	16.5
Syngenta	3732 NS	NS	1854	2140	--	46.8	63	7	5.4	30.2	17.4
Syngenta	3845 HO	HO	1622	1953	2173	47.2	61	10	5.3	27.2	15.6
Syngenta	3875 NS	NS	1867	1783	2164	45.7	64	2	5.8	28.5	16.7
Syngenta	3980 NS/CL	NS,CL	1639	1946	2056	43.5	68	6	5.6	28.4	15.7
Syngenta	4596 HO/DM	HO,DM	1661	--	--	45.6	69	12	5.5	27.6	15.6
Syngenta	4651 NS/DM	NS,DM	1738	--	--	43.0	67	5	5.6	28.0	15.2
Technology Crops	OL535	HO	1598	--	--	43.9	71	7	5.3	26.8	16.4
Technology Crops	OL555	HO	1504	--	--	45.7	67	7	5.4	26.9	17.8

Table 7. 2010 - Sunflower - Oilseed - Presho, SD (Continued)

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield[2] 2010	2-yr Avg.	3-yr Avg.	Oil Content (%)	Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
			-------(lb/a)-------								
Triumph Seed Co.	s655	NS,SS	1949	2171	2478	47.3	43	3	5.8	28.8	17.4
Triumph Seed Co.	s668	NS,SS	2203	2412	--	47.5	41	1	6.9	29.8	17.4
Triumph Seed Co.	s671	NS,SS	1964	2123	2296	47.4	46	1	6.0	28.9	17.1
Triumph Seed Co.	s674	NS,SS	1973	1929	--	50.7	43	3	6.0	30.5	13.5
Triumph Seed Co.	s678	NS,SS	2118	2209	2335	49.7	52	6	6.1	31.3	15.4
Triumph Seed Co.	s870HCL	HO,CL,SS	2021	--	--	48.1	43	2	5.5	27.6	15.0
Triumph Seed Co.	s878	HO,SS	1769	2186	2322	47.8	50	4	6.6	28.6	13.6
Triumph Seed Co.	s673	NS,SS	2122	--	--	48.1	45	4	6.1	29.1	16.5
Triumph Seed Co.	TRXs9422	NS,SS	1853	2251	--	49.8	48	1	5.7	29.9	18.6
USDA	USDA 894 (check)	Trad.	1258	1575	1624	46.7	58	8	5.9	26.9	16.9
Grand Mean			1792	2031	2169	46.0	60	6	5.7	28.6	16.4
LSD 5%			239	261	216	1.4	5	6	0.6	1.6	ns
C.V. %			9.5	13.1	12.4	2.2	4.2	75.3	8.0	4.0	12.9

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Stearic.
[2]The 2-yr yield average is from 2010 Presho and 2009 Reliance. The 3-yr yield average is from 2010 Presho and 2008 – 2009 Reliance.
Yield is reported at 10% moisture.
Planted June 9, 2010. Harvested Oct. 22, 2010. Previous crop = winter wheat.

Table 8. 2010 - Sunflower - Confection Hybrid - Onida, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield* (lb/a)	Days to Flwr	Days to Mat.	Plant Height (inch)	Test Wt. (lb/bu)	Lodge (%)	Pop. x1000 (plt/a)	Seed Over Screen 22/64	Seed Over Screen 20/64	Seed Over Screen 18/64	Nut-meat (%)
				---(days)---						---------(%)---------			
CHS	RH 400CL	Conf./CL	*	61	92	67	20.5	15	17.4	46.5	80.8	94.3	47.7
Croplan Genetics	179	Conf.	*	66	103	73	21.8	11	17.4	41.5	74.3	87.7	46.6
Dahlgren & Co.	9530	Conf.	*	64	99	80	22.2	13	17.4	55.7	81.2	92.9	50.3
Dahlgren & Co.	9592	Conf.	*	64	97	73	21.3	18	17.4	53.5	82.4	93.8	53.4
Dahlgren & Co.	9579	Conf.	*	63	99	69	19.1	15	17.4	51.4	85.3	98.1	52.9
Dahlgren & Co.	9569	Conf.	*	64	98	74	21.4	11	17.4	47.9	75.0	89.9	45.5
Dahlgren & Co.	9530CL	Conf.	*	68	105	81	22.3	14	17.4	36.7	70.1	88.7	54.8
Mycogen Seeds	8C451	Conf.	*	65	98	78	19.9	23	17.4	61.7	86.3	93.2	48.5
Red River Commodities	RRC 2215 CL	Conf./CL	*	67	108	79	22.8	14	17.4	45.3	75.5	87.1	46.8
Red River Commodities	RRC 2215	Conf.	*	64	100	74	23.5	15	17.4	52.9	83.6	93.7	50.3
Red River Commodities	RRC 2217	Conf.	*	64	97	74	21.1	19	17.4	57.2	83.1	92.3	52.9
Seeds 2000	Jaguar	Conf./CL	*	60	93	63	19.0	15	17.4	61.6	89.4	98.0	46.1
Seeds 2000	Panther II	Conf.	*	62	95	72	21.4	20	17.4	62.2	85.2	91.9	48.5
Triumph Seed Co., Inc	770CL	Conf./CL	*	71	112	87	23.9	9	16.5	45.6	82.2	95.9	56.5
USDA	924 (check)	Conf.	*	64	95	85	27.1	31	17.4	8.1	14.8	30.5	70.1
Grand Mean				65	99	75	21.8	16	17.34	48.5	76.6	88.5	51.4
LSD 5%				1	2	5	2.0	8	0.7	12.9	7.7	6.7	5.7
C.V. %				0.7	1.3	2.9	6.3	33.5	2.8	18.6	7.0	5.3	7.8

[1]Type: Conf. = Confection, CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature.
*Seed yields were too variable to report.
Planted June 9, 2010. Harvested October 30, 2010.

Table 9. 2010 - Sunflower - Oilseed - Averages across three locations (Bison, Onida, and Presho, SD).

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Oil Content (%)	Plant Height (in)	Lodge (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)
Advanta	NutriSun HS03	HS,HO	1415	39.6	64	9	29.9	16.7
Croplan Genetics	306 DMR NS	NS,DM	1593	45.8	63	9	28.5	16.7
Croplan Genetics	3080 DMR NS	NS,DM	1705	47.0	59	12	28.0	16.2
Croplan Genetics	356A NS	NS	2080	46.3	62	7	30.5	17.1
Croplan Genetics	378 DMR HO	HO,DM	1594	43.9	70	10	28.1	17.2
Croplan Genetics	460 E NS	NS,Exp	1437	48.3	68	15	28.4	16.6
Croplan Genetics	555 CL DMR NS	NS,CL,DM	1568	44.1	71	14	27.9	17.3
Croplan Genetics	559 CL DMR NS	NS,CL,DM	1788	46.3	71	10	28.8	15.9
King Seed Inc.	SunKing 3909 NSCL	NS,CL	1405	43.2	63	13	27.9	17.1
King Seed Inc.	SunKing 4404 NSCL	NS,CL	1533	42.2	68	13	28.8	17.5
Mycogen Seeds	8D481	NS	1932	42.4	69	7	30.0	16.9
Mycogen Seeds	8N358CLDM	NS,CL,DM	1617	46.5	69	9	28.6	17.2
Mycogen Seeds	8N453DM	NS,DM	1904	49.7	68	9	30.5	16.6
Mycogen Seeds	8N510	NS	1803	45.1	63	10	28.2	16.7
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,Exp	1666	44.6	66	13	26.2	16.4
Pioneer Hi-Bred	Pioneer Brand 63N82	NS,Exp	1693	45.6	66	4	30.4	17.2
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,Exp	1515	44.9	69	13	31.0	16.4
Syngenta	3732 NS	NS	1923	46.2	65	10	30.6	17.4
Syngenta	3845 HO	HO	1864	46.8	63	11	28.6	16.6
Syngenta	3875 NS	NS	2016	44.6	66	9	28.9	16.8
Syngenta	3980 NS/CL	NS,CL	1650	43.4	71	10	28.4	16.4
Syngenta	4596 HO/DM	HO,DM	1534	44.7	72	13	28.0	16.7
Syngenta	4651 NS/DM	NS,DM	1516	43.7	70	10	28.6	15.9
Technology Crops	OL535	HO	1516	43.3	70	10	27.0	16.7
Technology Crops	OL555	HO	1662	44.4	70	10	27.5	17.4
Triumph Seed Co., Inc	s655	NS,SS	1796	46.9	41	3	29.9	16.9
Triumph Seed Co., Inc	s668	NS,SS	2256	47.3	46	1	29.6	17.6
Triumph Seed Co., Inc	s674	NS,SS	1977	49.4	46	3	29.3	15.0
Triumph Seed Co., Inc	s678	NS,SS	2131	48.2	56	7	30.0	16.3
Triumph Seed Co., Inc	s870HCL	HO,CL,SS	1987	47.0	46	4	28.1	15.2
Triumph Seed Co., Inc	s673	NS,SS	1958	45.7	51	8	29.0	17.3
Triumph Seed Co., Inc	TRXs9422	NS,SS	1915	48.9	47	3	29.6	17.4
USDA	USDA 894 (check)	Trad.	1296	46.2	60	11	28.8	16.3
Mean			1735	45.5	63	9	28.9	16.7
LSD 5%			169	1.0	3	4	0.9	1.3
C.V. %			12.1	2.7	4.3	59.2	4.1	9.4

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Exp = ExpressSun, DM = Downy Mildew Resistant, SS = Short Stature, HS = High Stearic.

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SDSU EXTENSION

List of Tables

2011 South Dakota Sunflower Hybrid Performance Trials

Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Choose hybrids with characteristics that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Give more weight to information from trials close to home and look at relative performance over many locations and years. Performance averaged over many tests is called "yield stability."

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait like yield differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Presho oilseed test (Table 7) could be repeated in 2012 exactly as it was in 2011, the yield ranking of a hybrid that yielded 2365 lbs/A and one that yielded 2134 lbs/A might change places since their yield difference (231 lbs/A) is less than the indicated yield LSD value of 329 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Presho in 2011. In contrast, a hybrid that yielded 1965 lbs/A at Presho in 2011 would likely be lower yielding than one that yielded 2365 lbs/A if the two hybrids were grown again under similar conditions, because the difference between them in 2011 (2365 – 1965 = 400 lbs/A) exceeded the LSD value of 329 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to the aforementioned and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2011 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at four locations in South Dakota (Bison, Eureka, Onida, and Presho) in 2011. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, and high oleic hybrids. A non-oilseed (confection) sunflower trial was conducted at Onida. Test locations are indicated on the map in Figure 1. Trial sites for each of the hybrids tested in 2011 appear in Tables 1 and 2.

Climate

A summary of climate conditions near the sunflower test sites is presented in Table 3. The 2011 growing season began with below normal temperatures in May and June at all locations. May was drier than normal at Eureka and Presho but wetter than normal at Bison. June was cooler and wetter than normal at all stations. July brought warmer than normal temperatures and near normal precipitation at all locations. Bison was wetter than normal in August but the remaining locations had below normal precipitation with near normal temperatures. All stations had below normal precipitation in September and all but Onida remained drier than normal in October, which facilitated crop drydown even though the first killing frost (<24°F) did not occur until about October 20th, which was later than normal for all locations.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, spaced 30 inches apart. The center two rows of each plot were harvested. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding date at Eureka was June 3rd; Onida and Bison were seeded on June 8th. Wet field conditions delayed planting at Presho until June 30th. The previous crop at Eureka was corn; at Bison, Presho, and Onida it was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were good at all locations.

At Onida, damage expressed as a burning of upper leaves and flower buds was observed between stages R-1 and R-2 (early bud stage). This injury was believed to have been caused by a chemical application. Some hybrids showed greater levels of damage than others. Notes on the amount of damage observed are included in the yield results table for Onida (Table 6). The injured plants appeared to grow out of the damage, but it is not known how yield may have been affected.

Flowering was recorded at Presho as the number of days from planting to 50% ray petals extended. Days from planting to physiological maturity (rated visually) was also recorded at Presho. Plant height and lodging notes were taken at all locations immediately before harvest. Lodging was low at all sites for most hybrids. Presho had some leaning and lodged plants caused by high winds, but most plants were harvestable. Phomopsis stem lesions were observed at Eureka and Presho. Disease incidence was recorded on ten consecutive plants from each plot in replications one and two at Eureka and replication one at Presho. Most of the Phomopsis-infested plants remained standing and were harvested.

Plots at Eureka, Onida, and Presho were harvested with a Gleaner Model K combine fitted with a two-row all row crop header and HarvestMaster HM-400 HarvestData System. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGauge. Seed yields were adjusted to a 10% moisture basis. Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens.

A one-pint sub-sample of seed from each plot of the Onida confection trial was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was

determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Results

Data from each location and combined over locations are contained in Tables 4-9. Yields of oilseed hybrids were highest at Onida and Presho, averaging 1933 and 1928 lbs/acre, respectively over all hybrids tested, with an average oil content of 44.4% at Onida and 42.5% at Presho (Tables 6 & 7). The lowest overall yield was measured at Eureka, which averaged 1583 lbs/acre and 46.8% oil over 48 hybrids tested (Table 5). Twenty-four confection sunflower hybrids averaged 1602 lbs/acre seed yield at Onida (Table 8). In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

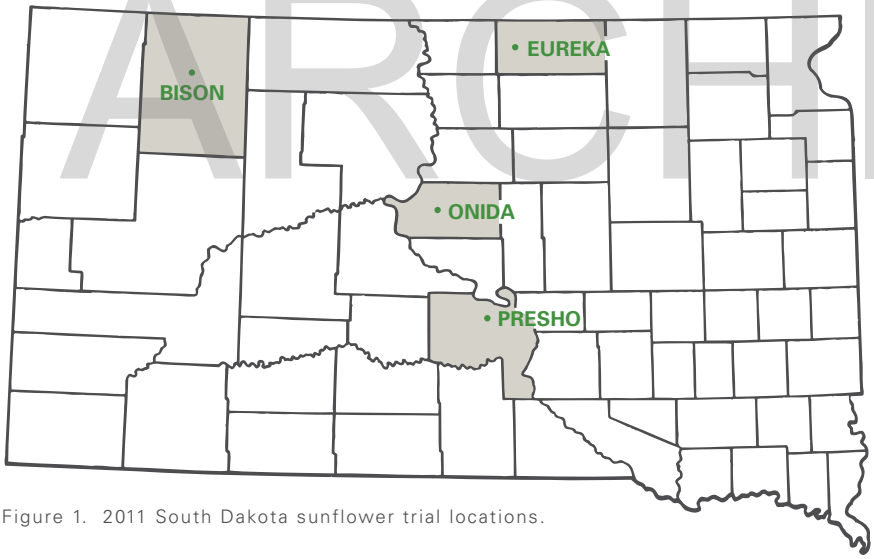

Figure 1. 2011 South Dakota sunflower trial locations.

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2011.

Company/Brand	Hybrid	Hybrid Type[1]	Location			
			Bison	Eureka	Onida	Presho
Croplan Genetics	306 DMR NS	NS,DM	X	X	X	X
Croplan Genetics	3080 DMR NS	NS,DM	X	X	X	X
Croplan Genetics	356A NS	NS	X	X	X	X
Croplan Genetics	378 DMR HO	HO,DM	X	X	X	X
Croplan Genetics	442 E NS	NS,EX	X	X	X	X
Croplan Genetics	460 E NS	NS,EX	X	X	X	X
Croplan Genetics	549 CL DMR NS	NS,CL,DM	X	X	X	X
Croplan Genetics	555 CL DMR NS	NS,CL,DM	X	X	X	X
Croplan Genetics	559 CL DMR NS	NS,CL,DM	X	X	X	X
Dahlgren & Co.	2012CL	HO,CL	X	X	X	X
Dahlgren & Co.	4421	Trad.	X	X	X	X
Dahlgren & Co.	44EXCL	Trad.,CL	X	X	X	X
Integra	724 NS/CL	NS,CL			X	X
Mycogen Seeds	8D310	NS	X	X	X	
Mycogen Seeds	8D481	NS	X	X	X	X
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X	X	
Mycogen Seeds	8N421CLDM	NS,CL,DM	X	X	X	X
Mycogen Seeds	8N453DM	NS,DM	X		X	X
Mycogen Seeds	8N510	NS	X	X	X	X
Pannar Seed	9501	Trad.	X		X	X
Pannar Seed	PAN7924 NS	NS	X		X	X
Pannar Seed	PAN9501NS	NS	X		X	X
Pannar Seed	PAN9612NS	NS	X		X	X
Pannar Seed	PANG3827	NS	X		X	X
Pannar Seed	PANH3838	NS	X		X	X
Pannar Seed	PANH3931	NS	X		X	X
Pannar Seed	PANH3950	NS	X		X	X
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	X	X	X	X
Seeds 2000	Badger	ConOil, CL	X	X	X	X
Seeds 2000	Camaro	NS,CL	X	X	X	X
Seeds 2000	Durango	NS,EX	X	X	X	X
Seeds 2000	Falcon	NS,EX	X	X	X	X
Seeds 2000	Sierra	HO				X
Seeds 2000	Torino	NS,CL	X	X	X	X
Seeds 2000	X9452	HO,CL	X	X	X	X
Seeds 2000	X9822	HO,CL	X	X	X	X
Syngenta	3875 NS	NS			X	
Syngenta	3158 NS/CL/DM	NS,CL,DM	X	X	X	X
Syngenta	3495 NS/CL/DM	NS,CL,DM	X	X	X	X
Syngenta	3733 NS/DM	NS,DM	X	X	X	X
Syngenta	3733 NS/DM coated	NS,DM	X	X	X	X
Syngenta	3845 HO	HO	X	X	X	X
Syngenta	7120 HO/DM	HO,DM	X	X	X	X
Syngenta	3990 NS/CL/DM	NS,CL,DM	X	X	X	X
Syngenta	3995 NS/SU	NS,EX	X	X	X	X
Syngenta	4596 HO/DM	HO,DM	X	X	X	X

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2011. (cont.)

Company/Brand	Hybrid	Hybrid Type[1]	Location			
			Bison	Eureka	Onida	Presho
Syngenta	NX01162	NS,CL	X	X	X	X
Syngenta	NX82758	NS,CL	X	X	X	X
Triumph Seed Co., Inc	810HCLD	HO,CL,DM		X		
Triumph Seed Co., Inc	859HCL	HO,CL			X	X
Triumph Seed Co., Inc	s655	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s668	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s673	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s674	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s678	NS,SS	X	X	X	X
Triumph Seed Co., Inc	s870HCL	HO,CL,SS	X	X	X	X
Triumph Seed Co., Inc	TRXs10429H	HO,SS			X	X
Triumph Seed Co., Inc	TRXs11431CL	CL,SS				X
Triumph Seed Co., Inc	TRXs11432CL	CL,SS				X
USDA	894 (check)	Trad.	X	X	X	X

[1]Type: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2011.

Company/Brand	Hybrid	Hybrid Type[1]	Onida
CHS	10EXP01	CL	X
CHS	10EXP02	CL	X
CHS	RH 400CL	CL	X
Dahlgren & Co.	9506CL	CL	X
Dahlgren & Co.	EX610		X
Dahlgren & Co.	EX819		X
Dahlgren & Co.	9530		X
Dahlgren & Co.	9530CL	CL	X
Dahlgren & Co.	9579		X
Mycogen Seeds	8C410CL	CL	X
Mycogen Seeds	8C451		X
Red River Commodities	RRC 2215		X
Red River Commodities	RRC 2215 CL	CL	X
Red River Commodities	RRC 2217		X
Seeds 2000	Jaguar	CL	X
Seeds 2000	Jaguar DMR	CL	X
Seeds 2000	Jaguar II	CL	X
Seeds 2000	Jaguar XL	CL	X
Seeds 2000	Panther II		X
Seeds 2000	Sundance		X
Seeds 2000	X3907		X
Seeds 2000	X9674		X
Triumph Seed Co., Inc	770CL	CL	X
USDA	924 (check)		X

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

Table 3. Climate summary for weather stations nearest to 2011 South Dakota sunflower test sites and departures from normal.

Location-Month	2010 Temperature			Total Precip (in.)	Departure from Normal[1]			Precip (in.)
	Avg Max	Avg Min	Mean		Max Temp	Min Temp	Avg Temp	
	(°F)				(°F)			
Bison*								
MAY	62.2	41.4	51.8	4.56	-7.3	-2.3	-4.8	1.84
JUNE	76.4	50.3	63.3	3.31	-2.5	-2.7	-2.7	0.49
JULY	86.0	62.4	74.2	2.53	4.0	4.0	2.0	0.26
AUGUST	85.6	57.9	71.8	4.19	1.0	1.0	0.2	2.72
SEPTEMBER	77.9	46.5	62.2	0.00	0.0	0.0	1.5	-1.20
OCTOBER	64.3	38.3	51.3	0.53	3.0	3.0	3.4	-0.93
Eureka*								
MAY	63.4	42.0	52.7	1.68	-6.4	-1.6	-4.0	-0.95
JUNE	76.2	53.6	64.9	4.68	-2.0	0.7	-0.7	1.51
JULY	85.9	64.4	75.2	2.83	1.5	6.4	3.8	0.05
AUGUST	83.7	58.5	71.1	1.50	-0.1	2.3	1.1	-0.80
SEPTEMBER	75.4	43.2	59.3	0.62	2.1	-2.2	-0.1	-0.81
OCTOBER	64.6	36.0	50.3	1.41	5.5	2.4	3.9	-0.25
Onida 4 NW*								
MAY	63.9	43.8	53.8	3.22	-6.5	-0.5	-3.6	0.37
JUNE	76.8	55.5	66.1	5.37	-3.4	1.9	-0.8	2.26
JULY	89.1	66.6	77.9	3.54	1.5	7.8	4.7	0.85
AUGUST	84.8	57.8	71.3	1.59	-1.0	0.8	-0.1	-0.55
SEPTEMBER	74.9	46.0	60.5	0.90	-1.1	-0.3	-0.7	-0.64
OCTOBER	64.6	39.8	52.2	3.47	3.4	5.3	4.3	1.89
Presho 7 NW*								
MAY	66.6	43.0	54.8	1.57	-5.7	-1.4	-3.6	-1.74
JUNE	79.5	53.9	66.7	5.87	-2.7	0.1	-1.3	2.36
JULY	90.9	65.9	78.4	2.42	1.6	6.3	4.0	-0.27
AUGUST	87.4	60.8	74.1	0.00	-1.3	3.0	0.8	-2.28
SEPTEMBER	77.7	45.6	61.7	0.31	-0.5	-1.6	-1.0	-1.18
OCTOBER	67.4	39.8	53.6	1.38	3.8	4.9	4.3	-0.13

* 2011 climate observations are based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2011 observations to 30-yr averages (1971–2000) for each site.

Table 4. 2011 - Sunflower - Oilseed - Bison, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Pop x1000 (Plt/a)
				2-yr	3-yr						
			2011	Avg.	Avg.						
			---------(lb/a)---------								
Croplan Genetics	306 DMR NS	NS,DM	2042	1873	1563	46.2	64	5.1	26.9	2	17.7
Croplan Genetics	3080 DMR NS	NS,DM	2053	1976	1660	47.3	69	4.8	26.8	1	17.8
Croplan Genetics	356A NS	NS	2396	2207	1775	46.7	63	7.5	28.0	0	18.0
Croplan Genetics	378 DMR HO	HO,DM	1524	1552	--	45.1	70	10.1	26.0	10	16.7
Croplan Genetics	442 E NS	NS,EX	1741	--	--	46.3	67	6.8	24.4	1	16.9
Croplan Genetics	460 E NS	NS,EX	1848	1646	1310	47.0	68	6.0	24.6	1	17.6
Croplan Genetics	548 CL DMR NS	NS,CL	2009	--	--	45.7	73	6.2	26.0	3	16.9
Croplan Genetics	555 CL DMR NS	NS,CL	1704	1492	1231	44.4	74	5.3	24.3	3	17.6
Croplan Genetics	559 CL DMR NS	NS,CL	2012	1792	--	44.1	76	5.0	27.0	2	17.5
Dahlgren & Co.	2012CL	HO,CL	1414	--	--	44.4	67	6.2	27.1	3	17.4
Dahlgren & Co.	4421	Trad.	1693	--	--	43.3	76	6.4	25.5	1	17.1
Dahlgren	44EXCL	Trad.	1607	--	--	40.0	78	7.6	22.1	1	17.7
Mycogen Seeds	8D310	NS	1489	--	--	40.5	74	6.2	25.2	3	17.7
Mycogen Seeds	8D481	NS	1866	1851	--	42.4	70	8.0	26.0	1	17.1
Mycogen Seeds	8H449CLDM	HO,CL	2406	--	--	47.8	66	9.7	28.0	1	17.6
Mycogen Seeds	8N358CLDM	NS,CL	1581	1541	1380	47.5	74	5.8	26.2	1	17.3
Mycogen Seeds	8N421CLDM	NS,CL	1989	--	--	44.1	70	6.1	26.1	4	17.9
Mycogen Seeds	8N453DM	NS,DM	1983	2064	--	48.0	74	7.5	28.1	7	17.3
Mycogen Seeds	8N510	NS	2094	1888	1681	45.1	69	7.1	24.4	8	18.1
Pannar Seed	PAN9501	Trad.	1769	--	--	42.7	79	8.2	26.4	8	17.4
Pannar Seed	PAN7924 NS	NS	1998	--	--	42.3	71	7.9	24.2	0	17.2
Pannar Seed	PAN9501NS	NS	1826	--	--	42.8	74	7.2	27.5	6	17.3
Pannar Seed	PAN9612NS	NS	2000	--	--	42.4	74	7.8	27.1	2	17.6
Pannar Seed	PANG3827	NS	1606	--	--	45.9	72	7.0	25.6	5	16.4
Pannar Seed	PANH3838	NS	1928	--	--	47.9	71	6.7	26.4	3	17.3
Pannar Seed	PANH3931	NS	1464	--	--	47.7	75	5.3	25.9	7	17.3
Pannar Seed	PANH3950	NS	1752	--	--	46.2	75	7.0	25.9	5	16.8
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX	1234	--	--	45.0	69	6.9	28.0	2	17.1
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX	1181	1411	--	44.3	69	4.3	26.9	4	17.7
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX	1487	--	--	45.5	73	6.3	27.0	3	17.7
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX	1610	1623	--	44.7	74	8.4	29.4	7	16.8
Seeds 2000	Badger	ConOil	1571	1537	--	39.0	74	7.5	24.7	4	17.4
Seeds 2000	Camaro	NS,CL	1655	--	--	43.6	72	7.5	27.8	2	17.3
Seeds 2000	Durango	NS,EX	1529	--	--	42.4	64	7.8	26.5	2	17.0
Seeds 2000	Falcon	NS,EX	1785	--	--	43.9	70	6.9	28.1	1	17.4
Seeds 2000	Torino	NS,CL	1878	--	--	44.1	76	9.1	27.5	0	17.8
Seeds 2000	X9452	HO,CL	1378	--	--	44.6	67	6.5	26.1	0	17.6
Seeds 2000	X9822	HO,CL	1171	--	--	43.6	66	6.0	27.1	2	17.3
Syngenta	3158 NS/CL/DM	NS,CL	2024	--	--	44.5	68	5.8	28.4	1	17.5
Syngenta	3495 NS/CL/DM	NS,CL	1758	--	--	42.5	68	5.9	29.0	1	17.6

Table 4. 2011 - Sunflower - Oilseed - Bison, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Pop x1000 (Plt/a)
			2011	2-yr Avg.	3-yr Avg.						
			---------(lb/a)---------								
Syngenta	3733 NS/DM	NS,DM	2058	--	--	46.7	66	5.3	27.1	1	17.9
Syngenta	3733 NS/DM coated	NS,DM	2366	--	--	45.7	66	5.1	27.6	0	17.6
Syngenta	3845 HO	HO	1866	1882	1546	47.8	66	5.7	27.9	3	16.8
Syngenta	7120 HO/DM	HO	1683	--	--	45.3	63	5.2	26.0	2	16.6
Syngenta	3990 NS/CL/DM	NS,CL	1751	--	--	45.5	72	8.1	27.8	1	17.5
Syngenta	3995 NS/SU	NS,EX	1599	--	--	41.1	67	5.2	25.0	0	17.6
Syngenta	4596 HO/DM	HO,DM	1734	1613	--	44.3	76	7.0	29.0	2	17.0
Syngenta	NX01162	NS,CL	1095	--	--	39.2	69	5.4	24.5	0	17.1
Syngenta	NX82758	NS,CL	1636	--	--	44.0	70	6.8	26.8	4	17.7
Triumph Seed Co.	s655	NS,SS	1562	1647	1401	45.6	47	5.6	27.1	0	18.1
Triumph Seed Co.	s668	NS,SS	1824	2112	--	45.6	61	9.4	25.4	3	17.9
Triumph Seed Co.	s673	NS,SS	2062	2094	--	45.1	64	5.3	25.1	1	17.8
Triumph Seed Co.	s674	NS,SS	1959	2023	1783	47.2	53	6.7	25.6	0	17.7
Triumph Seed Co.	s678	NS,SS	2001	2203	1830	46.6	59	7.8	28.6	1	17.8
Triumph Seed Co.	s870HCL	HO,CL	1511	1775	--	45.5	50	4.5	24.8	2	17.5
USDA	894 (check)	Trad.	1047	1199	1006	45.8	62	5.6	26.6	10	16.9
	Grand Mean		1747	1783	1514	44.7	69	6.7	26.5	3	17.4
	LSD 5%		278	222	180	1.8	3	1.0	1.3	5	0.8
	C.V.		11.4	12.6	14.1	2.8	3.0	11.0	3.4	128	3.3

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 8, 2011.

Table 5. 2011 - Sunflower - Oilseed - Eureka, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Phomopsis Incid.[2] (%)
Croplan Genetics	306 DMR NS	NS,DM	1781	48.1	68	9.6	26.2	1	95
Croplan Genetics	3080 DMR NS	NS,DM	1464	48.1	71	8.3	25.5	5	95
Croplan Genetics	356A NS	NS	1931	47.1	65	10.5	26.5	2	80
Croplan Genetics	378 DMR HO	HO,DM	1287	46.2	70	10.5	25.3	6	85
Croplan Genetics	442 E NS	NS,EX	2264	48.3	66	9.8	26.2	5	80
Croplan Genetics	460 E NS	NS,EX	1573	46.1	67	10.5	25.9	5	70
Croplan Genetics	548 CL DMR NS	NS,CL	1916	47.5	75	10.0	26.0	2	35
Croplan Genetics	555 CL DMR NS	NS,CL	1703	46.2	77	9.6	26.8	8	70
Croplan Genetics	559 CL DMR NS	NS,CL	2079	48.0	75	9.8	27.4	2	55
Dahlgren & Co.	2012CL	HO,CL	1628	47.9	71	9.6	27.0	4	80
Dahlgren & Co.	4421	Trad.	1072	44.6	69	8.4	23.6	5	80
Dahlgren	44EXCL	Trad.	1350	43.5	74	10.5	24.0	3	95
Mycogen Seeds	8D310	NS	1421	43.6	73	9.0	25.1	5	90
Mycogen Seeds	8D481	NS	2029	44.0	73	9.8	25.9	4	75
Mycogen Seeds	8H449CLDM	HO,CL	1927	47.8	69	10.7	26.4	4	90
Mycogen Seeds	8N358CLDM	NS,CL	1764	48.0	70	8.6	25.6	6	85
Mycogen Seeds	8N421CLDM	NS,CL	1623	46.6	66	8.7	26.1	1	100
Mycogen Seeds	8N510	NS	1649	45.7	65	8.9	25.1	2	55
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX	1384	47.1	73	9.7	27.2	4	50
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX	1524	46.6	69	9.2	26.3	4	10
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX	1471	47.2	69	9.5	27.4	1	55
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX	1417	46.5	71	10.5	26.9	2	55
Seeds 2000	Badger	ConOi	1129	43.8	71	9.0	26.7	6	90
Seeds 2000	Camaro	NS,CL	1709	46.8	70	10.9	27.8	4	90
Seeds 2000	Durango	NS,EX	1758	46.3	63	10.7	27.3	7	65
Seeds 2000	Falcon	NS,EX	1853	47.9	70	10.3	26.3	2	55
Seeds 2000	Torino	NS,CL	1633	46.5	71	11.3	26.4	5	70
Seeds 2000	X9452	HO,CL	1231	46.5	64	10.5	26.5	3	100
Seeds 2000	X9822	HO,CL	1245	46.2	65	9.6	25.9	2	90
Syngenta	3158 NS/CL/DM	NS,CL	1545	46.9	66	9.8	26.2	2	30
Syngenta	3495 NS/CL/DM	NS,CL	1696	46.6	72	9.0	28.4	4	70
Syngenta	3733 NS/DM	NS,DM	1454	47.0	69	10.1	26.7	3	90
Syngenta	3733 NS/DM coated	NS,DM	1823	47.4	67	10.1	27.6	4	20
Syngenta	3845 HO	HO	1512	48.9	64	9.3	25.9	4	50
Syngenta	7120 HO/DM	HO	1536	47.8	62	9.3	25.5	1	75
Syngenta	3990 NS/CL/DM	NS,CL	1383	46.5	65	10.6	25.7	1	45
Syngenta	3995 NS/SU	NS,EX	1608	45.2	63	9.9	25.9	3	35
Syngenta	4596 HO/DM	HO,DM	1945	47.9	67	10.1	27.6	5	55
Syngenta	NX01162	NS,CL	1323	44.2	66	8.9	25.4	4	90
Syngenta	NX82758	NS,CL	1297	47.4	66	9.6	26.3	3	80

Table 5. 2011 - Sunflower - Oilseed - Eureka, SD (cont.)

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Phomopsis Incid.[2] (%)
Triumph Seed Co., Inc	810HCLD	HO,CL	1393	47.7	69	9.0	26.3	4	85
Triumph Seed Co., Inc	s655	NS,SS	1329	47.6	44	9.6	25.8	3	40
Triumph Seed Co., Inc	s668	NS,SS	1743	48.3	50	10.7	26.5	0	45
Triumph Seed Co., Inc	s673	NS,SS	2027	46.7	54	11.2	25.5	2	0
Triumph Seed Co., Inc	s674	NS,SS	1667	47.8	47	9.7	24.7	3	5
Triumph Seed Co., Inc	s678	NS,SS	1515	47.2	48	10.0	26.6	2	20
Triumph Seed Co., Inc	s870HCL	HO,CL	1426	48.7	47	9.6	26.8	0	40
USDA	894 (check)	Trad.	947	48.0	56	9.5	25.1	4	50
		Grand Mean	1583	46.8	66	9.8	26.2	3	64
		LSD 5%	399	1.5	5	1.0	1.5	4	42
		C.V.	18.0	2.3	5.5	7.2	4.0	83.3	32.6

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Phomopsis incidence indicates the percentage of 10 consecutive plants of each hybrid in two replications that had one or more phomopsis stem lesions on 9/21/11. Infected plants were harvested unless lodged.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 3, 2011. Harvested Oct. 19, 2011. Previous crop = corn.

Table 6. 2011 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Bud Burn[2] (%)	Hulling Screen Test[3]
			2011	2-yr Avg.	3-yr Avg.							
			---------(lb/a)---------									
Croplan Genetics	306 DMR NS	NS,DM	1763	1647	1830	45.9	66	6.7	25.0	1	50	NT
Croplan Genetics	3080 DMR NS	NS,DM	1900	1744	1928	47.2	61	7.4	25.3	2	95	NT
Croplan Genetics	356A NS	NS	2217	2202	2211	45.6	64	8.8	26.4	1	10	NT
Croplan Genetics	378 DMR HO	HO,DM	1819	1732	--	43.1	74	8.2	24.6	2	15	NT
Croplan Genetics	442 E NS	NS,EX	2684	--	--	44.2	65	7.8	25.2	1	3	NT
Croplan Genetics	460 E NS	NS,EX	1790	1486	1758	44.8	63	7.3	24.9	1	40	NT
Croplan Genetics	548 CL DMR NS	NS,CL	1908	--	--	45.0	72	8.3	25.6	0	75	NT
Croplan Genetics	555 CL DMR NS	NS,CL	1802	1617	1721	43.5	71	6.9	25.2	1	90	NT
Croplan Genetics	559 CL DMR NS	NS,CL	2238	2058	--	45.0	71	7.6	25.8	3	80	NT
Dahlgren & Co.	2012CL	HO,CL	1529	--	--	44.0	67	7.1	26.1	0	40	NT
Dahlgren & Co.	4421	Trad.	1696	1610	--	44.0	69	7.0	24.4	1	75	NT
Dahlgren	44EXCL	Trad.	1886	--	--	39.1	70	8.1	24.1	1	99	NT
Integra	724 NS/CL	NS	2208	--	--	43.9	61	6.7	25.5	2	15	NT
Mycogen Seeds	8D310	NS	1740	--	--	42.6	68	7.3	24.6	2	90	NT
Mycogen Seeds	8D481	NS	2193	2087	2071	43.0	67	6.9	25.9	0	99	NT
Mycogen Seeds	8H449CLDM	HO,CL	1821	--	--	46.8	63	7.9	26.7	0	95	NT
Mycogen Seeds	8N358CLDM	NS,CL	1938	1819	1854	45.6	66	7.3	25.6	0	90	NT
Mycogen Seeds	8N421CLDM	NS,CL	1597	1634	--	44.6	63	7.0	25.1	3	100	NT
Mycogen Seeds	8N453DM	NS,DM	1881	1877	1968	47.5	70	7.9	26.5	2	98	NT
Mycogen Seeds	8N510	NS	2209	2001	2091	44.1	62	7.4	25.6	2	100	NT
Pannar Seed	PAN9501	Trad.	2113	1822	--	44.3	71	7.2	26.3	3	99	NT
Pannar Seed	PAN7924 NS	NS	1804	1745	1907	43.7	65	6.1	24.7	3	99	NT
Pannar Seed	PAN9501NS	NS	1665	--	--	42.3	70	7.9	26.5	2	99	NT
Pannar Seed	PAN9612NS	NS	1664	--	--	43.3	67	7.4	25.9	2	95	NT
Pannar Seed	PANG3827	NS	2293	--	--	45.5	65	7.8	25.6	3	50	NT
Pannar Seed	PANH3838	NS	2093	--	--	46.4	65	7.6	26.3	2	50	NT
Pannar Seed	PANH3931	NS	1940	--	--	46.0	69	7.0	25.5	1	40	NT
Pannar Seed	PANH3950	NS	1985	--	--	45.4	67	7.1	25.3	1	75	NT
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX	1600	--	--	45.2	68	7.4	25.7	1	30	Excel
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX	1944	1691	--	44.5	65	7.0	24.2	1	50	Excel
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX	2247	--	--	44.5	66	7.2	25.3	0	40	Excel
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX	1791	1602	--	44.2	67	8.2	25.7	2	50	Fail
Seeds 2000	Badger	ConOil	1765	1404	1683	40.8	69	7.4	24.5	2	10	NT
Seeds 2000	Camaro	NS,CL	1606	--	--	43.7	65	8.2	26.3	0	98	NT
Seeds 2000	Durango	NS,EX	1766	--	--	44.2	65	7.5	25.3	1	10	NT
Seeds 2000	Falcon	NS,EX	2281	--	--	44.5	65	7.4	25.9	2	2	NT
Seeds 2000	Torino	NS,CL	1793	--	--	44.4	67	7.5	27.2	3	93	NT
Seeds 2000	X9452	HO,CL	1718	--	--	43.7	60	6.1	25.5	0	15	NT
Seeds 2000	X9822	HO,CL	1165	--	--	43.8	64	7.3	24.9	0	25	NT
Syngenta	3875 NS	NS	2603	2334	2295	45.3	68	8.6	26.1	2	75	NT
Syngenta	3158 NS/CL/DM	NS,CL	2206	--	--	45.7	67	6.6	26.5	2	10	NT
Syngenta	3495 NS/CL/DM	NS,CL	1946	--	--	43.3	67	7.4	26.3	1	20	NT
Syngenta	3733 NS/DM	NS,DM	2601	--	--	46.0	69	7.4	25.8	2	20	NT
Syngenta	3733 NS/DM coated	NS,DM	2158	--	--	45.4	70	7.4	25.7	0	30	NT
Syngenta	3845 HO	HO	2254	2162	2075	44.9	65	7.5	26.7	2	95	NT

Table 6. 2011 - Sunflower - Oilseed - Onida, SD (cont.)

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content (%)	Plant Height (in)	Harv. Moist. (%)	Test Wt. (lb/bu)	Lodge (%)	Bud Burn[2] (%)	Hulling Screen Test[3]
			2011	2-yr Avg.	3-yr Avg.							
			---------(lb/a)---------									
Syngenta	7120 HO/DM	HO	1754	--	--	46.0	65	7.4	25.6	2	50	NT
Syngenta	3990 NS/CL/DM	NS,CL	1546	--	--	42.9	63	7.4	24.7	1	99	NT
Syngenta	3995 NS/SU	NS,EX	1755	--	--	42.3	63	7.6	24.8	0	60	NT
Syngenta	4596 HO/DM	HO,DM	2172	1810	--	43.7	73	8.0	26.2	0	5	NT
Syngenta	NX01162	NS,CL	1485	--	--	42.4	69	6.8	24.2	0	95	NT
Syngenta	NX82758	NS,CL	1724	--	--	43.4	69	7.6	24.7	4	5	NT
Triumph Seed Co., Inc	859HCL	HO,CL	1878	--	--	43.7	67	7.3	25.9	1	75	NT
Triumph Seed Co., Inc	s655	NS,SS	1752	1730	1798	45.9	46	6.8	25.4	1	80	NT
Triumph Seed Co., Inc	s668	NS,SS	2397	2280	2327	45.3	47	9.5	25.5	0	80	NT
Triumph Seed Co., Inc	s673	NS,SS	2373	1999	--	44.6	52	8.9	25.6	1	95	NT
Triumph Seed Co., Inc	s674	NS,SS	1458	1665	1688	45.6	46	7.2	25.5	2	25	NT
Triumph Seed Co., Inc	s678	NS,SS	2352	2111	2091	44.9	53	8.0	26.5	0	20	NT
Triumph Seed Co., Inc	s870HCL	HO,CL	1943	1922	--	45.8	41	7.6	25.9	0	30	NT
Triumph Seed Co., Inc	TRXs10429H	HO,SS	2046	--	--	44.6	55	7.5	25.6	0	30	NT
USDA	894 (check)	Trad.	1524	1401	1595	45.1	62	6.9	24.2	4	30	NT
		Grand Mean	1933	1828	1939	44.4	65	7.5	25.5	1		
		LSD 5%	420	253	216	1.7	3	1.1	0.9	2		
		C.V.	15.6	14.1	13.9	2.7	3.7	10.6	2.6	136.5		

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Bud burn is the approximate percent of immature heads and upper leaves that showed damage believed to have been caused by a chemical application between stages R-1 and R-2. It is not known how yield may have been affected.

[3]Hulling screen test: Excel = > 65% of seed passes over a 14/64 screen; Good = > 75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 8, 2011. Harvested Oct. 20, 2011. Previous crop = wheat.

Table 7. 2011 Sunflower - Oilseed - Presho, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield[2]			Oil Content (%)	Days to		Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)	Phomopsis Incid.[3] (%)
			2011	2-yr Avg.	3-yr Avg.		Flwr	Mat.						
			---------(lb/a)---------				---(days)---							
Croplan Genetics	306 DMR NS	NS,DM	1821	1682	1894	42.6	57	94	61	3	11.3	23.9	18.0	90
Croplan Genetics	3080 DMR NS	NS,DM	1815	1721	1801	43.0	57	96	58	1	11.2	24.6	18.0	40
Croplan Genetics	356A NS	NS	1883	1958	2031	42.3	58	97	57	3	12.2	25.7	15.5	20
Croplan Genetics	378 DMR HO	HO,DM	1735	1645	--	42.0	58	99	65	8	16.3	24.7	15.8	0
Croplan Genetics	442 E NS	NS,EX	1947	--	--	44.2	58	102	61	13	15.8	24.6	18.0	10
Croplan Genetics	460 E NS	NS,EX	1614	1649	1734	42.7	59	100	61	5	13.6	24.5	16.9	20
Croplan Genetics	548 CL DMR NS	NS,CL	2290	--	--	43.8	58	99	67	2	15.9	25.8	18.0	10
Croplan Genetics	555 CL DMR NS	NS,CL	1931	1962	2010	42.8	58	97	62	1	11.8	22.9	17.9	20
Croplan Genetics	559 CL DMR NS	NS,CL	2348	2130	--	42.3	58	99	66	1	14.7	25.3	18.0	10
Dahlgren & Co.	2012CL	HO,CL	1741	--	--	42.5	56	93	63	7	12.4	24.5	18.0	10
Dahlgren & Co.	4421	Trad.	2007	--	--	41.1	56	93	64	5	10.8	24.5	18.0	40
Dahlgren	44EXCL	Trad.	1414	--	--	41.4	58	94	68	4	12.3	22.3	18.0	70
Integra	724 NS/CL	NS	1754	--	--	41.2	58	97	54	0	11.2	25.2	18.0	0
Mycogen Seeds	8D481	NS	1939	1959	2067	40.6	58	99	63	3	12.5	24.5	18.0	30
Mycogen Seeds	8H449CLDM	HO,CL	2202	--	--	45.1	59	100	62	2	16.2	26.3	18.0	20
Mycogen Seeds	8N421CLDM	NS,CL	1828	1761	--	42.7	58	98	58	0	14.1	24.7	18.0	10
Mycogen Seeds	8N453DM	NS,DM	1965	1830	1975	43.8	58	96	63	4	14.5	25.1	18.0	30
Mycogen Seeds	8N510	NS	1875	1905	2232	42.3	58	99	59	5	14.9	24.7	18.0	10
Pannar Seed	PAN9501	Trad.	2025	2093	--	43.2	60	100	65	2	13.6	25.3	18.0	0
Pannar Seed	PAN7924 NS	NS	1797	1893	2001	40.1	60	100	64	3	15.4	24.0	18.0	40
Pannar Seed	PAN9501NS	NS	2004	--	--	42.1	58	98	63	5	13.8	25.4	18.0	10
Pannar Seed	PAN9612NS	NS	2049	--	--	40.4	57	98	59	4	14.1	26.2	18.0	0
Pannar Seed	PANG3827	NS	2365	--	--	43.2	57	100	63	3	14.3	25.7	18.0	10
Pannar Seed	PANH3838	NS	1885	--	--	45.0	58	100	57	4	13.8	25.4	18.0	0
Pannar Seed	PANH3931	NS	2038	--	--	43.7	59	99	61	2	13.0	24.4	18.0	10
Pannar Seed	PANH3950	NS	2134	--	--	42.6	58	99	63	4	13.7	26.1	18.0	10
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX	1740	--	--	43.0	58	96	64	0	13.6	25.1	18.0	40
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX	2048	1984	--	43.0	58	96	64	3	11.7	23.3	18.0	30
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX	2017	--	--	43.3	58	97	63	2	13.6	25.4	18.0	10
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX	1671	1583	--	42.8	58	98	65	6	16.5	26.0	18.0	30
Seeds 2000	Badger	ConOil	1623	--	--	40.3	57	97	64	5	13.4	25.0	18.0	60
Seeds 2000	Camaro	NS,CL	2152	--	--	40.6	59	99	65	4	16.8	25.8	18.0	30
Seeds 2000	Durango	NS,EX	1983	--	--	41.5	61	101	56	2	18.1	25.8	18.0	0
Seeds 2000	Falcon	NS,EX	1855	--	--	42.0	59	99	59	6	14.9	25.2	18.0	20
Seeds 2000	Sierra	HO	1761	--	--	43.1	61	104	61	14	15.3	24.6	17.1	30
Seeds 2000	Torino	NS,CL	2075	--	--	42.0	60	100	64	5	18.8	25.7	18.0	20
Seeds 2000	X9452	HO,CL	1768	--	--	41.6	58	98	58	1	13.7	24.9	18.0	30
Seeds 2000	X9822	HO,CL	1675	--	--	41.2	58	96	59	3	14.8	24.7	16.3	50
Syngenta	3158 NS/CL/DM	NS,CL	2172	--	--	41.7	58	99	62	6	17.2	26.2	18.0	10
Syngenta	3495 NS/CL/DM	NS,CL	2115	--	--	41.4	58	96	61	1	12.5	26.5	18.0	0
Syngenta	3733 NS/DM	NS,DM	2155	--	--	43.9	58	97	61	1	12.9	25.9	18.0	10
Syngenta	3733 NS/DM coated	NS,DM	2257	--	--	42.6	58	97	59	2	12.5	26.6	17.9	0
Syngenta	3845 HO	HO	1978	1800	1961	44.0	57	97	58	4	12.3	25.8	17.9	40
Syngenta	7120 HO/DM	HO	1749	--	--	41.4	56	92	59	2	11.6	24.5	18.0	50
Syngenta	3990 NS/CL/DM	NS,CL	2203	--	--	42.0	59	98	63	3	17.3	26.1	18.0	20

Table 7. 2011 Sunflower - Oilseed - Presho, SD (cont.)

Brand	Hybrid	Hybrid Type[1]	Seed Yield[2]			Oil Content (%)	Days to		Plant Height (in)	Lodge (%)	Harv. Moist. (%)	Test Wt. (lb/bu)	Pop. x1000 (Plt/a)	Phomopsis Incid.[3] (%)
			2011	2-yr Avg.	3-yr Avg.		Flwr	Mat.						
			---------(lb/a)---------				---(days)---							
Syngenta	3995 NS/SU	NS,EX	1582	--	--	39.8	57	97	57	1	12.5	24.9	17.9	0
Syngenta	4596 HO/DM	HO,DM	2104	1883	--	42.4	58	99	67	6	16.5	26.9	18.0	0
Syngenta	NX01162	NS,CL	1774	--	--	40.9	58	96	61	3	12.3	23.9	18.0	40
Syngenta	NX82758	NS,CL	2200	--	--	41.4	59	100	65	5	15.5	24.6	18.0	10
Triumph Seed Co.	859HCL	HO,CL	1714	--	--	41.3	60	102	58	7	13.3	24.8	18.0	30
Triumph Seed Co.	s655	NS,SS	1816	1882	2053	42.1	60	100	39	0	15.0	26.9	17.9	30
Triumph Seed Co.	s668	NS,SS	2094	2149	2306	45.4	60	104	39	0	20.9	26.6	18.0	10
Triumph Seed Co.	s673	NS,SS	2191	2157	--	42.6	61	101	43	0	22.0	26.2	18.0	10
Triumph Seed Co.	s674	NS,SS	1826	1899	1894	43.8	62	103	38	0	20.1	26.4	17.1	10
Triumph Seed Co.	s678	NS,SS	1933	2026	2117	45.2	61	104	50	0	18.9	27.1	18.0	0
Triumph Seed Co.	s870HCL	HO,CL	1723	1872	--	43.2	61	102	37	0	15.3	25.1	17.9	20
Triumph Seed Co.	TRXs10429H	HO,SS	1784	--	--	43.3	61	105	47	1	14.3	25.3	18.0	20
Triumph Seed Co.	TRXs11431CL	CL,SS	2146	--	--	43.8	59	105	41	1	19.3	25.3	18.0	20
Triumph Seed Co.	TRXs11432CL	CL,SS	1924	--	--	44.7	58	102	39	0	18.8	26.0	18.0	20
USDA	894 (check)	Trad.	1480	1369	1543	43.7	58	96	52	12	12.6	24.6	18.0	70
	Grand mean		1928	1866	1975	42.5	58	99	58	3	14.6	25.2	17.8	22
	LSD 5%		329	202	205	1.8	1	2	3	3	2.4	1.1	ns	
	C.V.		12.2	11.0	12.9	3.0	1.0	1.4	4.0	70.3	11.7	3.2	5.8	

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]The 2-yr yield average is from 2010 and 2011 Presho, the 3-yr yield average is from 2010 and 2011 Presho and 2009 Reliance.

[3]Phomopsis incidence indicates the percentage of 10 consecutive plants of each hybrid in one replication that had one or more phomopsis stem lesions on 9/22/11. Infected plants were harvested unless lodged.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 30, 2011. Harvested Oct. 25, 2011. Previous crop = winter wheat.

Table 8. 2011 - Sunflower - Confection Hybrid - Onida, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Plant Height (inch)	Test Wt. (lb/bu)	Lodge (%)	Seed Over Screen			Nutmeat (%)
							22/64	20/64	18/64	
							----------(%)----------			
CHS	10EXP01	CL	1826	66	20.3	2	79	91	95	44.7
CHS	10EXP02	CL	1687	63	20.2	1	80	90	93	47.7
CHS	RH 400CL	CL	1711	63	20.6	0	69	86	92	45.9
Dahlgren & Co.	9506CL	CL	1340	66	19.9	4	68	84	90	48.5
Dahlgren	EX610		1554	68	20.3	1	65	87	93	48.7
Dahlgren	EX819		1457	67	18.4	1	72	86	91	49.3
Dahlgren & Co.	9530		1575	67	21.0	0	64	83	90	48.2
Dahlgren & Co.	9530CL	CL	1776	74	20.5	0	59	80	87	48.3
Dahlgren & Co.	9579		1386	56	18.6	3	67	85	91	49.5
Mycogen Seeds	8C410CL	CL	1604	71	21.1	3	69	86	91	46.8
Mycogen Seeds	8C451		1437	68	21.1	2	76	88	92	48.7
Red River Commodities	RRC 2215		1791	70	20.3	3	67	83	89	47.7
Red River Commodities	RRC 2215 CL	CL	1785	72	20.3	3	68	86	91	45.9
Red River Commodities	RRC 2217		1881	71	19.5	2	78	88	92	46.1
Seeds 2000	Jaguar	CL	1695	68	21.7	3	69	84	91	44.8
Seeds 2000	Jaguar DMR	CL,DM	1441	68	20.4	1	76	88	93	47.8
Seeds 2000	Jaguar II	CL	1511	72	20.6	3	70	84	91	46.2
Seeds 2000	Jaguar XL	CL	1979	81	19.8	3	60	80	89	45.1
Seeds 2000	Panther II		1447	68	20.4	2	65	80	88	46.2
Seeds 2000	Sundance		2091	68	21.4	0	57	79	90	48.5
Seeds 2000	X9674		1580	69	20.8	0	74	86	92	46.7
Triumph Seed Co., Inc	770CL	CL	1352	69	21.4	5	69	84	91	47.4
Seeds 2000	X3907		1606	69	21.9	2	66	85	92	47.4
USDA	924 (check)		925	78	19.9	9	52	66	77	45.8
		Grand Mean	1602	69	20.4	2	68	84	91	47.2
		LSD 5%	404	4	ns	3	9	6	4	2.9
		C.V.	17.9	4.4	7.8	87.4	9.3	5.2	3.5	4.3

[1]Type: CL = Clearfield, DM = Downy Mildew Resistant.

Planted June 8, 2011. Harvested October 24, 2011.

Table 9. 2011 - Sunflower - Oilseed - Averages across four locations (Bison, Eureka, Onida, and Presho, SD).

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Oil Content (%)	Plant Height (in)	Lodge (%)	Test Wt. (lb/bu)	Harv. Moist. (%)
Croplan Genetics	306 DMR NS	NS,DM	1852	45.7	65	2	25.5	8.2
Croplan Genetics	3080 DMR NS	NS,DM	1808	46.4	65	2	25.6	7.9
Croplan Genetics	356A NS	NS	2107	45.4	62	2	26.6	9.8
Croplan Genetics	378 DMR HO	HO,DM	1591	44.1	70	7	25.2	11.3
Croplan Genetics	442 E NS	NS,EX	2159	45.8	65	5	25.1	10.0
Croplan Genetics	460 E NS	NS,EX	1706	45.2	65	3	25.0	9.3
Croplan Genetics	548 CL DMR NS	NS,CL	2031	45.5	72	2	25.8	10.1
Croplan Genetics	555 CL DMR NS	NS,CL	1785	44.2	71	3	24.8	8.4
Croplan Genetics	559 CL DMR NS	NS,CL	2169	44.8	72	2	26.4	9.3
Dahlgren & Co.	2012CL	HO,CL	1578	44.7	67	3	26.1	8.8
Dahlgren & Co.	4421	Trad.	1617	43.3	69	3	24.5	8.2
Dahlgren	44EXCL	Trad.	1564	41.0	72	2	23.1	9.6
Mycogen Seeds	8D481	NS	2007	42.5	68	2	25.6	9.3
Mycogen Seeds	8H449CLDM	HO,CL	2089	46.9	65	2	26.9	11.2
Mycogen Seeds	8N421CLDM	NS,CL	1759	44.5	64	2	25.5	9.0

Table 9. 2011 - Sunflower - Oilseed - Averages across four locations (Bison, Eureka, Onida, and Presho, SD). (cont.)

Brand	Hybrid	Hybrid Type[1]	Seed Yield (lb/a)	Oil Content (%)	Plant Height (in)	Lodge (%)	Test Wt. (lb/bu)	Harv. Moist. (%)
Mycogen Seeds	8N510	NS	1957	44.3	64	5	24.9	9.6
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX	1490	45.1	69	2	26.5	9.4
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX	1674	44.6	67	3	25.2	8.0
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX	1806	45.1	68	2	26.3	9.2
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX	1622	44.6	69	4	27.0	10.9
Seeds 2000	Badger	ConOil	1522	41.0	69	4	25.2	9.3
Seeds 2000	Camaro	NS,CL	1780	43.7	68	3	26.9	10.8
Seeds 2000	Durango	NS,EX	1759	43.6	62	3	26.2	11.0
Seeds 2000	Falcon	NS,EX	1944	44.6	66	3	26.4	9.9
Seeds 2000	Torino	NS,CL	1845	44.3	69	3	26.7	11.7
Seeds 2000	X9452	HO,CL	1524	44.1	62	1	25.7	9.2
Seeds 2000	X9822	HO,CL	1314	43.7	64	2	25.7	9.4
Syngenta	3158 NS/CL/DM	NS,CL	1987	44.7	66	3	26.8	9.9
Syngenta	3495 NS/CL/DM	NS,CL	1879	43.5	67	2	27.6	8.7
Syngenta	3733 NS/DM	NS,DM	2067	45.9	66	2	26.4	8.9
Syngenta	3733 NS/DM coated	NS,DM	2151	45.3	65	2	26.9	8.8
Syngenta	3845 HO	HO	1902	46.4	63	3	26.6	8.7
Syngenta	7120 HO/DM	HO	1680	45.1	62	2	25.4	8.4
Syngenta	3990 NS/CL/DM	NS,CL	1721	44.2	66	2	26.1	10.9
Syngenta	3995 NS/SU	NS,EX	1636	42.1	63	1	25.1	8.8
Syngenta	4596 HO/DM	HO,DM	1989	44.6	71	3	27.4	10.4
Syngenta	NX01162	NS,CL	1419	41.7	67	2	24.5	8.4
Syngenta	NX82758	NS,CL	1714	44.1	67	4	25.6	9.9
Triumph Seed Co., Inc	s655	NS,SS	1615	45.3	44	1	26.3	9.2
Triumph Seed Co., Inc	s668	NS,SS	2014	46.2	50	1	26.0	12.6
Triumph Seed Co., Inc	s673	NS,SS	2163	44.7	53	1	25.6	11.9
Triumph Seed Co., Inc	s674	NS,SS	1727	46.1	46	1	25.6	10.9
Triumph Seed Co., Inc	s678	NS,SS	1950	46.0	53	1	27.2	11.2
Triumph Seed Co., Inc	s870HCL	HO,CL	1651	45.8	44	0	25.6	9.3
USDA	USDA 894 (check)	Trad.	1249	45.7	58	7	25.1	8.7
		Mean	1791	44.6	64	2	25.9	9.7
		LSD 5%	179	0.8	2	2	0.6	0.7
		C.V. %	14.4	2.7	4.2	106.4	3.4	11.1

1Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

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SDSU EXTENSION

Table of Contents

2012 South Dakota Flax Variety Evaluations

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The success of flax production is affected by choice of variety. Variety characteristics such as seed yield, oil content, disease resistance, and maturity should be examined carefully when deciding which variety or varieties to plant. In some cases oil content or other traits may offset a yield advantage.

Yield

Evaluate as much yield data as possible when selecting a variety, looking at relative performance over many locations and years. For example, variety comparisons over 3 years are better than those from a single year or location. A consistent performance of a variety over many environments is called "yield stability".

To determine if one variety is better than another for a given trait, use the least significant difference (LSD.05) value at the bottom of each data column. The LSD value is a statistical way to indicate if a trait like yield differs when comparing two varieties. If two varieties differ by more than the indicated LSD value for a given trait, they will likely differ when grown again under highly similar conditions.

When evaluating yield, look at as many trials as possible. Trial results from neighboring states are readily available and provide additional data on variety performance. It is unlikely that the environmental conditions of a test will repeat in any future year.

The coefficient of variability (C.V.) listed at the bottom of the data table is a relative measure of the precision or reliability of a test. Generally, trials with low C.V. rates are more reliable for making variety choices than trials with higher C.V. rates. Trials with C.V. rates of 15-20% or less may be considered reliable.

Oil Content and Composition

Among varieties with similar yield potential, select the one with the highest oil content. It does not pay to sacrifice yield for oil content, however.

Maturity

Later-maturing varieties generally will produce higher yields than early varieties when seeded at normal planting dates. Maturity is particularly important if planting is delayed. In many cases of late seeding only an early variety will mature properly and exhibit its best yield potential and oil content.

Disease Resistance

The two most serious flax diseases are wilt and rust. Currently, all commercially-grown flax varieties are resistant to race 371 of the flax rust pathogen, *Melampsora lini*. This is the most common naturally-occurring rust race in North America. Flax wilt is caused by *Fusarium oxysporum* f. sp. *lini*, a soil-borne pathogen that can infect plants at any stage of development. It may cause wilting and death of seedlings or older plants, stunting, loss of vigor, and reduced yield. Flax varieties differ in their resistance to flax wilt. If flax is grown in a field with a history of wilt, a wilt-resistant variety should be selected. A fungicide seed treatment is recommended to provide early protection to infection by seed-borne and soil-borne organisms that cause seedling blight and damping-off.

Seed Availability and Quality

Seed sources for Canadian and some older flax varieties may be limited. Be sure to plant only high quality seed with good germination. Certified seed is recommended to assure varietal purity, seed viability, and freedom from pathogens and weed seed.

Seed Color

Most current flax varieties produce brown seeds. A few yellow or golden-seeded flax varieties are available and may be preferred by certain markets.

2012 Trial Procedures

A yield trial of flax varieties and experimental lines from South Dakota, North Dakota, and Canada was grown at Brookings, SD in 2012. The purpose of the trial was to provide performance data on released flax varieties to producers and compare performance of experimental lines to established checks in order to identify possible new varieties.

In 2012, nine experimental lines from the North Dakota State University flax breeding program were tested against 23 released varieties. The trial was planted on April 24, 2012. The previous crop was wheat. Experiment design was a randomized complete block with three replications. Plots consisted of seven rows 20 ft. long, with rows spaced seven inches apart. Flowering was recorded as the number days from planting to 50% of plants in flower. Plant height was recorded at maturity. Plots were harvested by cutting the middle three rows of each plot with a bundle cutter, then drying and threshing the bundles. Oil content was determined with a Bruker minispec NMR on 35 ml seed samples from each plot.

The 2012 growing season at Brookings was generally hot and dry. Stands were very good in all plots, and lodging was negligible. Yield, oil, flowering, and height data collected in 2012 are contained in Table 1. Two-year means are provided for varieties tested in both 2011 and 2012. Seed yield in 2012 averaged 19.1 bushels/acre over all the varieties tested, with 35.1% oil.

Table 1. Flax 2012 Regional Trial -- Brookings, SD

Variety	Origin-Year	Seed Yield		Oil		Days to Flower	Plant Height (in.)	Seed Color
		2012	2-yr	2012	2-yr			
		---(bu/acre)---		-----(%)-----				
AC Hanley	CAN-02	17.0	13.8	33.8	36.5	52	23	Brown
AC Lightning	CAN-01	16.8	14.3	35.1	37.0	51	21	Brown
Bison	ND-27	19.4	15.8	34.8	37.3	53	20	Brown
Carter	ND-05	17.2	15.9	35.5	37.3	52	21	Yellow
CDC Arras	CAN-00	17.8	15.3	32.4	35.8	52	24	Brown
CDC Bethune	CAN-00	14.9	13.3	33.0	35.5	52	22	Brown
CDC Glas	CAN-12	16.5	--	32.5	--	53	20	Brown
CDC Sanctuary	CAN-12	17.2	--	32.7	--	55	22	Brown
CDC Sorrel	CAN-07	25.1	18.5	35.2	36.9	53	22	Brown
Linott	CAN-66	16.2	14.8	34.8	36.6	52	22	Brown
McGregor	CAN-82	16.9	13.8	32.3	35.6	53	23	Brown
Neche	ND-88	18.9	16.5	34.7	36.7	52	23	Brown
Nekoma	ND-02	20.7	17.3	36.0	37.6	51	22	Brown
Omega	ND-90	19.6	15.7	34.0	36.5	53	20	Yellow
Pembina	ND-97	19.5	15.5	34.7	36.8	52	22	Brown
Prairie Blue	CAN-03	17.1	14.8	33.2	36.4	53	21	Brown
Prairie Grande	CAN-08	18.1	15.1	33.7	36.3	49	19	Brown
Prairie Sapphire	CAN-12	18.4	16.6	34.6	37.7	52	23	Brown
Prairie Thunder	CAN-08	22.4	17.4	35.9	37.5	50	21	Brown
Rahab 94	SD-94	19.2	13.9	34.8	37.0	52	19	Brown
Selby	SD-00	20.6	16.9	35.9	37.5	52	21	Brown
Webster	SD-98	19.0	16.5	35.3	37.6	53	23	Brown
York	ND-02	17.0	14.2	31.7	36.0	52	22	Brown
Experimentals								
N06 2055	ND-exp.	18.9	17.7	36.9	38.2	55	23	Yellow
N06 2059	ND-exp.	23.0	19.5	36.9	38.1	53	22	Yellow
N10 2047	ND-exp.	19.8	17.2	36.8	37.4	56	24	Yellow
N11 2010 ADTS trt 23	ND-exp.	19.3	17.1	37.2	38.4	54	22	Yellow
N11 2010 ADTS trt 9	ND-exp.	18.9	15.9	37.9	38.2	55	23	Yellow
N11 2010 NTS trt 12	ND-exp.	20.3	17.3	38.5	38.2	52	21	Yellow
N11 2010 NTS trt 16	ND-exp.	20.8	17.2	36.3	37.8	52	21	Yellow
N12 2011 NTS trt10	ND-exp.	23.2	--	36.4	--	52	22	Brown
N12 2011 NTS trt11	ND-exp.	20.7	--	38.1	--	52	20	Yellow
Average		19.1	16.0	35.1	37.1	52	22	
LSD 5%		3.2	1.8	2.1	1.5	1	2	
C.V.		10.3	9.9	3.7	3.4	1.5	4.6	
Planted April 24, 2012.								

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List of Tables

2012 South Dakota Sunflower Hybrid Performance Trials

Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Select hybrids with traits that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Consider information from trials close to your production area, but give more weight to relative hybrid performance over many locations and years. Performance averaged over many tests (locations and years) is called yield stability.

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Presho oilseed test (Table 10) could be repeated in 2013 exactly as it was in 2012, the yield ranking of a hybrid that yielded 2504 lbs/A and one that yielded 2248 lbs/A might change ranking since their yield difference (256 lbs/A) is less than the indicated yield LSD value of 315 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Presho in 2012. In contrast, a hybrid that yielded 2060 lbs/A at Presho in 2012 would likely be lower yielding than one that yielded 2504 lbs/A if the two hybrids were grown again under similar conditions, because their difference in 2012 (2504 – 2060 = 444 lbs/A) exceeded the LSD value of 315 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Hybrid disease ratings may be included with some performance trial results. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for

crushing, hulling, or birdfeed.

2012 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Harrold, Mound City, Onida, and Presho) in 2012. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted at Harrold and Onida. Test locations are indicated on the map in Figure 1. Trial sites for each of the hybrids tested in 2012 appear in Tables 1 and 2.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, with a 30 inch row spacing. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding date at Bison was May 29th. Mound City was planted on June 7th and Onida on June 11th. Harrold and Presho were seeded on June 12th. The previous crop at Harrold was corn. At all other locations, the previous crop was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were good at Bison, Harrold, and Presho but Mound City and Onida had poor/variable stands in the first replication of the oilseed trials. Due to the variable stands, the first replication of the oilseed trials at Mound City and Onida were excluded from the yield analyses. The confection trial at Onida had variable stands throughout. Plots with stands less than 11,000 plants/acre were excluded from the yield analysis.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Plant height and lodging notes were taken at all locations immediately before harvest. At all locations except Bison, the center two rows of each 4-row plot were harvested with a Gleaner Model K combine fitted with a two-row all row crop header and HarvestMaster HM-400 HarvestData System. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGauge. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot for oil analysis.

Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens. A one-pint sub-sample of seed from each plot of the Harrold and Onida confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Climate

The 2012 growing season was generally dry. The U.S. Drought monitor showed 100% of South Dakota under some level of drought from July 10th through the remainder of the growing season. A summary of climate conditions near the sunflower test sites is presented in Table 3. The closest weather station to the Presho sunflower plots was at Kennebec, the station closest to Harrold was located 1 mile west of Highmore, and the station nearest to the Mound City sunflower plot was located in Selby. The 2012 growing season began with above normal temperatures in May through July at all locations. The average mean temperature in August was close to normal near Bison and Harrold (Highmore 1 W), but slightly cooler than normal near Presho (Kennebec), Onida, and Mound City (Selby). September was considerably warmer than normal at all stations, while October was cooler. Harrold, Onida, and Presho had considerably below normal precipitation throughout the growing season, ranging from 0 to 65% of normal. Bison was dryer than normal all months except July and Mound City was dryer than normal all months except May and August. The first killing frost (<24°F) occurred about October 5th at all locations.

Results

Data from each location and combined over locations are contained in Tables 4-12 . Lodging was low at all sites for most hybrids. Very little disease was observed in any of the plots, probably due to the dry conditions. Oilseed yields were highest at Harrold, where 50 hybrids averaged 2581 lbs/acre, with 39.6% oil (Table 5). The lowest yields were recorded at Bison (Table 4), with 50 hybrids averaging 1603 lbs/acre and 40.7% oil. Confection hybrid yields were slightly higher at Harrold than at Onida, averaging 2019 lbs/acre across the 28 hybrids tested (Table 6). In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

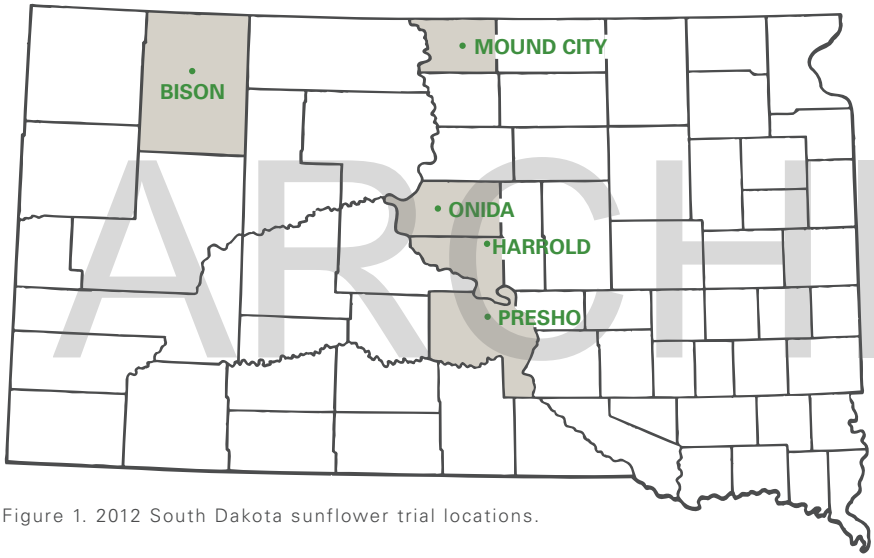

Figure 1. 2012 South Dakota sunflower trial locations.

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2012.

Company/ Brand	Hybrid	Hybrid Type[1]	Location				
			Bison	Harrold	Mound City	Onida	Presho
Croplan Genetics	3080 DMR NS	NS,DM	X	X	X	X	X
Croplan Genetics	432 E DMR NS	NS,EX,DM	X	X	X	X	X
Croplan Genetics	460 E NS	NS,EX	X	X	X	X	X
Croplan Genetics	548 CL DMR NS	NS,CL,DM	X	X	X	X	X
Croplan Genetics	559 CL DMR NS	NS,CL,DM	X	X	X	X	X
Genosys	11G04	HO			X	X	
Genosys	11G08	NS			X	X	
Genosys	11G12	HO,CL			X	X	
Genosys	11G13	NS,CL			X	X	
Genosys	12E12	HO,CL			X	X	
Genosys	12E13	HO,CL			X	X	
Genosys	12E14	HO,CL			X	X	
Legend Seeds	LSF 318NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 7813N	NS	X	X	X	X	X
Legend Seeds	LSF 8560NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9302HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9501	Trad.	X	X	X	X	X
Legend Seeds	LSF 9505NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9568NCL	NS,CL	X	X	X	X	X
Mycogen Seeds	8D310	ConOil	X	X	X	X	
Mycogen Seeds	8D417	ConOil,SS	X	X	X	X	X
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	X	X
Mycogen Seeds	8N270CLDM	CL,DM	X		X		
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X	X	X	
Mycogen Seeds	8N421CLDM	NS,CL,DM	X	X	X	X	X
Mycogen Seeds	8N510	NS		X		X	X
Mycogen Seeds	8N678S	SS		X		X	X
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	X	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	X	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	X	X	X	X	X
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	X	X	X	X	X
Proseed	E-21 CL	HO	X	X	X	X	X
Proseed	E-23 CL	Trad.	X	X	X	X	X
Proseed	E-85	HO	X	X	X	X	X
Seeds 2000	Badger	ConOil, CL	X	X	X	X	X
Seeds 2000	Badger HO	HO,CL,ConOil	X	X	X	X	X
Seeds 2000	Daytona	HO,CL	X	X	X	X	X
Seeds 2000	Durango	NS,EX	X	X	X	X	X
Seeds 2000	Falcon	NS,EX	X	X	X	X	X
Seeds 2000	Torino	NS,CL	X	X	X	X	X
Seeds 2000	X5807	Dehul	X	X	X	X	X
Seeds 2000	X5870	NS,EX,Dehul	X	X	X	X	X
Seeds 2000	X6814	HO,CL,DM	X	X	X	X	X
Seeds 2000	X6822	HO,CL,DM	X	X	X	X	X
Seeds 2000	X6872	NS,CL,DM	X	X	X	X	X

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2012.

Company/ Brand	Hybrid	Hybrid Type[1]	Location				
			Bison	Harrold	Mound City	Onida	Presho
Seeds 2000	X6878	NS,CL,DM	X	X	X	X	X
Dahlgren-Sunopta	4421	ConOil			X	X	
Dahlgren-Sunopta	4421CL	CL,ConOil			X	X	
Syngenta	3158 NS/CL/DM	NS,CL,DM	X	X	X	X	X
Syngenta	3495 NS/CL/DM	NS,CL,DM	X	X	X	X	X
Syngenta	3733 NS/DM	NS,DM	X	X	X	X	X
Syngenta	3733 NS/DM Pelleted	NS,DM	X	X	X	X	X
Syngenta	3845 HO	HO	X	X	X	X	X
Syngenta	3990 NS/CL/DM	NS,CL,DM	X	X	X	X	X
Syngenta	3995 NS/SU	NS,EX	X	X	X	X	X
Syngenta	3158 NS/CL/DM Pelleted	HO,DM	X	X	X	X	X
Syngenta	NX24121	HO,CL,DM	X	X	X	X	X
Syngenta	NX24122	HO,CL,DM	X	X	X	X	X
Syngenta	NX24123	HO,CL,DM	X	X	X	X	X
USDA	894 (check)	Trad.	X	X	X	X	X
USDA	cms HA465/RHA 439 (chk)	NS	X		X		

[1]Type: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2012.

Company/ Brand	Hybrid	Hybrid Type[1]	Location	
			Harrold	Onida
CHS	12EXP01	EX	X	X
CHS	12EXP02	CL	X	X
CHS	10EXP01	CL	X	X
Genosys	12GCF05			X
Genosys	12GCF06			X
Genosys	12GCF07			X
Genosys	12GCF08			X
Genosys	12GCF09			X
Mycogen Seeds	8C451CP	CL	X	X
Nuseed Global	5009		X	X
Nuseed Global	NHW11901	DM, EX	X	X
Nuseed Global	NHW11902		X	X
Nuseed Global	NHW11903	DM	X	X
Nuseed Global	NHW11904	DM	X	X
Nuseed Global	NHW11906		X	X
Nuseed Global	NHW11909		X	X
Nuseed Global	NHW11914		X	X
Nuseed Global	NHW11921	DM	X	X
Nuseed Global	NHW11932	DM	X	X
Nuseed Global	NHW11933	DM, EX	X	X
Nuseed Global	NHW11936	DM, EX	X	X
Nuseed Global	NHW11944	DM, EX	X	X
Nuseed Global	X379		X	X
Nuseed Global	X4417		X	X
Red River Commodities	RRC 2215		X	X
Red River Commodities	RRC 2215 CL	CL	X	X
Red River Commodities	RRC 2217		X	X
Seeds 2000	Jaguar	CL	X	X
Seeds 2000	Jaguar DMR	CL,DM	X	X
Seeds 2000	Jaguar II	CL	X	X
Seeds 2000	X4334	CL	X	X
Seeds 2000	X4337	CL	X	X
Dahlgren-Sunopta	0089CL	CL		X
Dahlgren-Sunopta	9530			X
Dahlgren-Sunopta	9530CL	CL		X
Dahlgren-Sunopta	9569			X
Dahlgren-Sunopta	9579			X
Dahlgren-Sunopta	9592CL	CL		X
USDA	924 (check)		X	X

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.

Table 3. Climate summary for weather stations nearest to 2012 South Dakota sunflower test sites and departures from normal.

Location-Month	2012 Temperature			Total Precip (in.)	Departure from Normal[1]			
	Avg Max.	Avg Min.	Mean		Max Temp	Min Temp	Avg Temp	Precip %
	------(°F)------				------(°F)------			
Bison*								
May	70.5	42.4	56.5	2.16	1.7	-0.9	0.4	70
June	84.1	53.8	68.9	0.60	6.1	1.4	3.7	21
July	92.8	63.2	78.0	2.74	6.3	4.5	5.4	116
August	87.4	56.5	71.9	0.98	1.0	-0.5	0.2	60
September	81.9	47.2	64.6	0.00	6.6	0.6	3.6	0
October	58.6	32.4	45.5	0.54	-1.6	-2.5	-2.1	37
Highmore 1 W*								
May	73.5	45.7	59.6	2.48	3.3	1.3	2.3	90
June	85.6	58.0	71.8	1.97	6.6	3.7	5.2	65
July	96.5	65.6	81.1	0.74	9.7	5.4	7.6	27
August	89.6	55.1	72.4	0.44	4.2	-3.4	0.4	20
September	83.1	46.1	64.6	0.00	7.6	-2.5	2.5	0
October	61.3	33.9	47.6	0.11	0.5	-2.2	-0.9	8
Kennebec*								
May	75.3	46.8	61.1	2.96	2.4	0.9	1.7	94
June	87.6	58.8	73.2	1.90	5.7	3.0	4.4	57
July	97.6	66.3	82.0	1.45	7.9	4.3	6.1	58
August	90.4	55.6	73.0	0.59	2.0	-4.4	-1.2	31
September	84.9	45.9	65.4	0.17	5.7	-3.4	1.1	10
October	64.1	34.5	49.3	0.35	0.3	-1.5	-0.6	23
Onida 4 NW*								
May	71.7	44.8	58.2	1.94	1.7	0.7	1.1	63
June	84.1	57.1	70.6	2.10	4.4	3.1	3.8	63
July	94.3	64.5	79.4	0.06	6.4	4.7	5.6	2
August	87.3	54.5	70.9	0.56	1.4	-3.3	-1.0	24
September	80.7	46.0	63.3	0.02	4.6	-1.2	1.6	1
October	59.3	33.2	46.3	0.15	-1.2	-1.4	-1.3	9
Selby*								
May	69.6	44.2	56.9	3.18	1.8	-1.1	0.3	126
June	82.1	55.6	68.8	2.35	4.9	0.6	2.7	73
July	90.1	63.6	76.9	1.93	5.6	3.0	4.4	74
August	83.1	54.6	68.9	2.82	-0.2	-3.5	-1.8	128
September	77.9	45.2	61.6	0.00	5.3	-2.5	1.4	0
October	55.6	33.0	44.3	0.49	-2.5	-0.8	-1.7	31

*2012 climate observations are based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2012 observations to 30-yr averages (1981-2010) for each site

Table 4. 2012 - Sunflower - Oilseed - Bison, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2012	2-yr Avg.	3-yr Avg.					
			---------(lb/a)---------			(%)	(in)	(%)	(lb/bu)	(%)
Croplan Genetics	3080 DMR NS	NS,DM	1191	1622	1714	44.9	52	3.9	25.6	2
Croplan Genetics	432 E DMR NS	NS,EX,DM	1807	--	--	40.1	51	4.0	24.8	0
Croplan Genetics	460 E NS	NS,EX	1832	1840	1708	41.3	61	4.1	25.1	1
Croplan Genetics	548 CL DMR NS	NS,CL,DM	1587	1798	--	40.8	59	3.8	25.5	0
Croplan Genetics	559 CL DMR NS	NS,CL,DM	1956	1984	1847	42.1	59	4.5	25.8	1
Legend Seeds	LSF 318NCL	NS,CL	1597	--	--	39.9	52	3.8	25.2	3
Legend Seeds	LSF 7813N	NS	1604	--	--	42.4	59	4.8	26.5	1
Legend Seeds	LSF 8560NCL	NS,CL	1800	--	--	39.1	59	5.2	24.3	0
Legend Seeds	LSF 9302HOCL	HO,CL	1469	--	--	40.0	50	4.0	25.9	1
Legend Seeds	LSF 9501	Trad.	1882	--	--	39.1	59	4.6	25.6	3
Legend Seeds	LSF 9505NCL	NS,CL	1945	--	--	41.7	57	4.5	27.1	0
Legend Seeds	LSF 9568NCL	NS,CL	1554	--	--	39.5	50	3.5	25.1	0
Mycogen Seeds	8D310	ConOil	1572	1531	--	39.9	55	3.8	24.4	1
Mycogen Seeds	8D417	ConOil,SS	1635	--	--	38.5	45	5.5	25.9	0
Mycogen Seeds	8H449CLDM	HO,CL,DM	1633	2020	--	46.2	53	5.8	27.8	0
Mycogen Seeds	8N270CLDM	CL,DM	1491	--	--	45.1	52	4.1	26.4	2
Mycogen Seeds	8N358CLDM	NS,CL,DM	1862	1721	1648	44.0	55	3.9	25.1	1
Mycogen Seeds	8N421CLDM	NS,CL,DM	1854	1922	--	42.8	58	4.5	24.9	0
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	1521	1378	--	40.0	54	4.4	25.1	0
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	1490	1336	1437	38.7	55	3.4	21.8	0
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	1791	1639	--	41.9	56	4.1	25.1	0
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	1706	1658	1651	40.7	51	4.7	26.0	1
Proseed	E-21 CL	HO	1660	--	--	40.0	61	4.3	24.8	1
Proseed	E-23 CL	Trad.	1859	--	--	40.6	60	6.0	28.2	0
Proseed	E-85	HO	1707	--	--	39.4	56	3.6	24.1	0
Seeds 2000	Badger	ConOil, CL	1618	1594	1564	37.9	55	4.4	24.9	5
Seeds 2000	Badger HO	HO,CL,ConOil	1594	--	--	36.4	57	4.5	22.7	0
Seeds 2000	Daytona	HO,CL	1367	1372	--	41.3	54	4.3	25.5	0
Seeds 2000	Durango	NS,EX	1214	1371	--	39.5	43	5.3	25.5	0
Seeds 2000	Falcon	NS,EX	1422	1603	--	40.4	50	4.3	25.9	1
Seeds 2000	Torino	NS,CL	1680	1779	--	42.2	59	4.6	27.5	2
Seeds 2000	X5807	Dehul	1616	--	--	37.6	57	3.4	20.8	1
Seeds 2000	X5870	NS,EX,Dehul	1518	--	--	37.0	59	4.0	23.3	0
Seeds 2000	X6814	HO,CL,DM	1832	--	--	40.8	59	4.2	24.9	1
Seeds 2000	X6822	HO,CL,DM	1063	--	--	39.7	54	3.8	26.3	2
Seeds 2000	X6872	NS,CL,DM	1305	--	--	39.2	58	4.0	24.8	1
Seeds 2000	X6878	NS,CL,DM	1890	--	--	41.5	55	3.9	27.0	2
Syngenta	3158 NS/CL/DM	NS,CL,DM	1431	1727	--	41.2	49	4.3	25.9	1
Syngenta	3495 NS/CL/DM	NS,CL,DM	1491	1625	--	40.9	54	4.1	26.2	1
Syngenta	3733 NS/DM	NS,DM	1633	1846	--	41.4	49	3.8	25.9	1
Syngenta	3733 NS/DM Pelleted	NS,DM	1794	--	--	41.8	57	3.8	24.5	1
Syngenta	3845 HO	HO	1806	1836	1857	42.3	51	4.5	26.3	0
Syngenta	3990 NS/CL/DM	NS,CL,DM	1797	1774	--	41.9	53	4.0	26.0	1
Syngenta	3995 NS/SU	NS,EX	1456	1528	--	40.1	52	4.0	26.4	0

Table 4. 2012 - Sunflower - Oilseed - Bison, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2012	2-yr Avg.	3-yr Avg.					
			---------(lb/a)---------			(%)	(in)	(%)	(lb/bu)	(%)
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	1486	--	--	40.3	51	3.7	25.8	0
Syngenta	NX24121	HO,CL,DM	1432	--	--	40.3	54	4.1	26.6	4
Syngenta	NX24122	HO,CL,DM	1801	--	--	37.7	63	3.9	23.8	1
Syngenta	NX24123	HO,CL,DM	1453	--	--	39.8	57	4.9	23.8	2
USDA	894 (check)	Trad.	1328	1188	1242	43.0	50	4.2	26.8	1
USDA	cms HA465/RHA 439 (chk)	NS	1325	--	--	41.4	51	4.0	27.2	1
Grand mean			1603	1657	1653	40.7	54	4.3	25.4	1
LSD 5%			377	233	193	1.8	5	0.5	1.1	2
C.V.			16.8	14	14.6	3.2	6.7	8.5	3.1	204

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted May 29, 2012. Harvested Oct. 15, 2012. Previous crop = wheat.

Table 5. 2012 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	2012 Seed Yield	Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			(lbs/a)	(%)	(in)	(%)	(lb/bu)	(%)	(Plt/a)
Croplan Genetics	3080 DMR NS	NS,DM	2508	41.5	59	7.2	27.1	2	18.0
Croplan Genetics	432 E DMR NS	NS,EX,DM	2559	39.2	64	7.5	26.9	0	18.0
Croplan Genetics	460 E NS	NS,EX	2759	40.4	63	8.2	25.6	3	18.0
Croplan Genetics	548 CL DMR NS	NS,CL,DM	2606	39.9	57	8.1	27.1	2	18.0
Croplan Genetics	559 CL DMR NS	NS,CL,DM	2477	40.3	61	8.3	27.1	3	18.0
Legend Seeds	LSF 318NCL	NS,CL	2558	38.7	57	7.5	26.4	4	18.0
Legend Seeds	LSF 7813N	NS	2530	40.1	57	10.0	26.2	2	18.0
Legend Seeds	LSF 8560NCL	NS,CL	2133	39.1	64	8.9	25.8	3	18.0
Legend Seeds	LSF 9302HOCL	HO,CL	2806	39.3	53	9.2	26.0	2	18.0
Legend Seeds	LSF 9501	Trad.	2836	39.0	66	8.5	25.8	1	18.0
Legend Seeds	LSF 9505NCL	NS,CL	2433	41.2	59	9.8	25.6	0	18.0
Legend Seeds	LSF 9568NCL	NS,CL	2487	38.9	60	8.3	26.7	0	18.0
Mycogen Seeds	8D310	ConOil	2544	38.6	59	7.8	25.3	0	18.0
Mycogen Seeds	8D417	ConOil,SS	2342	38.9	44	8.6	26.0	1	18.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	2425	39.8	57	8.0	27.1	1	18.0
Mycogen Seeds	8N358CLDM	NS,CL,DM	2546	41.3	58	6.7	26.5	1	18.0
Mycogen Seeds	8N421CLDM	NS,CL,DM	2541	40.2	61	7.9	25.7	1	18.0
Mycogen Seeds	8N510	NS	2579	39.6	59	9.6	25.3	1	18.0
Mycogen Seeds	8N678S	SS	2596	42.5	48	10.3	26.7	1	18.0
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	2384	38.5	61	7.4	25.2	1	18.0
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	2677	38.6	63	7.1	24.5	4	18.0
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	1897	39.8	63	7.7	26.1	2	18.0
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	2795	41.2	61	10.2	27.4	1	18.0
Proseed	E-21 CL	HO	2535	39.2	64	8.8	26.6	2	17.4
Proseed	E-23 CL	Trad.	2692	39.2	67	9.8	27.1	2	18.0
Proseed	E-85	HO	2419	39.2	65	7.9	25.3	3	18.0
Seeds 2000	Badger	ConOil, CL	2691	38.0	64	8.2	25.4	4	18.0
Seeds 2000	Badger HO	HO,CL,ConOil	2701	35.7	59	8.7	25.3	2	17.0
Seeds 2000	Daytona	HO,CL	2969	39.8	55	10.5	26.7	1	18.0
Seeds 2000	Durango	NS,EX	2526	38.7	57	12.4	26.5	1	18.0
Seeds 2000	Falcon	NS,EX	2609	39.7	61	8.2	26.3	2	18.0
Seeds 2000	Torino	NS,CL	2697	39.4	59	9.4	27.9	1	18.0
Seeds 2000	X5807	Dehul	2402	38.3	60	7.9	24.3	1	18.0
Seeds 2000	X5870	NS,EX,Dehul	2416	36.0	63	7.9	24.3	4	18.0
Seeds 2000	X6814	HO,CL,DM	2690	38.8	63	8.2	27.0	0	18.0
Seeds 2000	X6822	HO,CL,DM	2453	39.3	57	8.3	25.8	2	16.9
Seeds 2000	X6872	NS,CL,DM	2383	38.6	59	9.6	25.1	2	18.0
Seeds 2000	X6878	NS,CL,DM	2638	40.7	60	9.5	28.6	1	18.0
Syngenta	3158 NS/CL/DM	NS,CL,DM	2995	40.9	61	7.7	26.3	3	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	2536	40.5	62	8.2	26.6	4	18.0
Syngenta	3733 NS/DM	NS,DM	2873	42.3	61	8.1	26.0	1	18.0
Syngenta	3733 NS/DM Pelleted	NS,DM	2909	40.3	61	7.1	26.5	1	18.0
Syngenta	3845 HO	HO	3122	41.9	61	9.0	26.4	0	18.0
Syngenta	3990 NS/CL/DM	NS,CL,DM	2651	39.6	62	8.3	26.8	1	18.0

Table 5. 2012 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	2012 Seed Yield	Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			(lbs/a)	(%)	(in)	(%)	(lb/bu)	(%)	(Plt/a)
Syngenta	3995 NS/SU	NS,EX	2177	40.2	59	9.2	25.8	0	18.0
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	2827	41.2	63	6.9	27.6	1	18.0
Syngenta	NX24121	HO,CL,DM	2510	38.1	55	7.0	26.0	0	18.0
Syngenta	NX24122	HO,CL,DM	2449	38.6	63	7.6	25.1	9	18.0
Syngenta	NX24123	HO,CL,DM	2402	39.9	63	8.0	25.0	1	18.0
USDA	894 (check)	Trad.	2540	40.6	55	10.0	26.3	0	18.0
Grand mean			2581	39.6	60	8.5	26.2	2	18.0
LSD 5%			418	1.5	4	1.5	1.1	3	ns
C.V.			11.6	2.7	4.7	12.5	3.1	122.6	2.6

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 12, 2012. Harvested Oct. 7, 2012. Previous crop = corn.

Table 6. 2012 - Sunflower - Confection Hybrid - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield	Plant Height	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nutmeat
								22/64	20/64	18/64	
			(lb/a)	(in)	(lb/bu)	(%)	(Plt/a)	----------(%)----------			(%)
CHS	12EXP01	EX	2333	59	19.6	1	18.0	60	81	88	47.4
CHS	12EXP02	CL	2156	63	18.7	1	18.0	44	66	85	47.3
CHS	10EXP01	CL	2337	57	18.9	3	18.0	57	78	88	48.4
Mycogen Seeds	8C451CP	CL	2063	61	18.2	1	18.0	53	73	86	49.2
Nuseed Global	5009		2165	61	18.8	1	18.0	50	76	90	48.5
Nuseed Global	NHW11901	DM, EX	1919	55	17.8	1	12.9	45	71	84	47.4
Nuseed Global	NHW11902		2161	60	20.0	5	17.1	46	75	84	45.7
Nuseed Global	NHW11903	DM	2001	57	19.8	2	18.0	44	75	86	44.2
Nuseed Global	NHW11904	DM	1942	59	18.9	0	18.0	59	81	89	45.6
Nuseed Global	NHW11906		2366	59	18.3	0	18.0	54	78	88	46.4
Nuseed Global	NHW11909		2025	61	18.6	2	18.0	51	73	84	48.6
Nuseed Global	NHW11914		2160	65	18.2	2	18.0	53	75	87	50.7
Nuseed Global	NHW11921	DM	1966	67	19.1	3	18.0	45	72	86	44.4
Nuseed Global	NHW11932	DM	2045	58	18.4	0	18.0	48	77	85	50.6
Nuseed Global	NHW11933	DM, EX	1914	59	19.0	0	18.0	45	73	86	48.7
Nuseed Global	NHW11936	DM, EX	1878	54	19.1	3	18.0	54	79	87	49.8
Nuseed Global	NHW11944	DM, EX	1936	58	19.2	1	18.0	47	71	84	37.9
Nuseed Global	X379		2013	55	19.4	1	18.0	49	76	86	49.7
Nuseed Global	X4417		1930	52	17.4	2	18.0	55	72	85	45.6
Red River Commodities	RRC 2215		2228	60	19.5	3	18.0	33	60	74	52.6
Red River Commodities	RRC 2215 CL	CL	1996	63	19.9	0	18.0	43	74	87	47.6
Red River Commodities	RRC 2217		965	56	17.0	1	2.8	60	76	85	47.9
Seeds 2000	Jaguar	CL	2115	59	19.4	2	18.0	50	73	85	49.6
Seeds 2000	Jaguar DMR	CL,DM	1856	56	18.7	3	18.0	54	77	85	47.6
Seeds 2000	Jaguar II	CL	2190	59	18.3	2	18.0	54	75	82	47.8
Seeds 2000	X4334	CL	2237	65	19.0	4	18.0	45	68	79	50.3
Seeds 2000	X4337	CL	2272	67	19.5	2	17.4	44	68	86	46.2
USDA	924 (check)		1376	60	18.3	2	18.0	32	48	70	56.4
Grand Mean			2019	59	18.8	2	17.2	49	73	85	47.9
LSD 5%			337	5	1.6	ns	1.7	14	10	7	ns
C.V.			11.9	5.9	5.9	130	6.9	20.8	9.3	5.6	11.7

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Planted June 12, 2012. Harvested October 8, 2012. Previous crop = corn.

Table 7. 2012 - Sunflower - Oilseed - Mound City, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Pop. x1000
			2012	2-yr Avg.					
			-----(lb/a)-----		(%)	(in)	(%)	(lb/bu)	(Plt/a)
Croplan Genetics	3080 DMR NS	NS,DM	2628	2046	41.4	53	8.1	26.6	18.0
Croplan Genetics	432 E DMR NS	NS,EX,DM	2533	--	38.6	55	8.6	28.1	18.0
Croplan Genetics	460 E NS	NS,EX	2528	2051	41.6	61	9.3	25.9	17.1
Croplan Genetics	548 CL DMR NS	NS,CL,DM	2282	2099	39.0	57	9.1	26.5	15.6
Croplan Genetics	559 CL DMR NS	NS,CL,DM	2550	2315	39.6	59	8.7	25.8	16.8
Genosys	11G04	HO	2235	--	38.8	59	8.6	27.9	18.0
Genosys	11G08	NS	2135	--	39.5	60	7.5	26.2	18.0
Genosys	11G12	HO,CL	1953	--	38.6	59	9.8	27.1	18.0
Genosys	11G13	NS,CL	1833	--	38.2	56	7.6	25.8	17.4
Genosys	12E12	HO,CL	2448	--	38.4	61	8.9	27.3	18.0
Genosys	12E13	HO,CL	2454	--	38.8	61	8.4	26.4	17.4
Genosys	12E14	HO,CL	2796	--	37.8	67	8.4	26.8	18.0
Legend Seeds	LSF 318NCL	NS,CL	2428	--	38.7	52	8.6	25.0	16.2
Legend Seeds	LSF 7813N	NS	2733	--	39.3	57	9.6	27.8	18.0
Legend Seeds	LSF 8560NCL	NS,CL	1927	--	38.6	64	9.5	26.5	17.7
Legend Seeds	LSF 9302HOCL	HO,CL	2442	--	39.6	56	9.4	27.2	17.7
Legend Seeds	LSF 9501	Trad.	2692	--	39.5	62	8.4	27.4	18.0
Legend Seeds	LSF 9505NCL	NS,CL	2284	--	39.9	61	8.8	26.1	17.7
Legend Seeds	LSF 9568NCL	NS,CL	1849	--	38.1	54	9.8	25.0	17.1
Mycogen Seeds	8D310	ConOil	2519	1970	38.3	57	8.4	26.7	18.0
Mycogen Seeds	8D417	ConOil,SS	2525	--	39.9	46	9.0	29.2	18.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	2465	2196	41.8	55	9.8	27.1	17.7
Mycogen Seeds	8N270CLDM	CL,DM	2122	--	40.9	54	8.2	27.5	18.0
Mycogen Seeds	8N358CLDM	NS,CL,DM	2433	2098	39.8	54	7.1	25.8	18.0
Mycogen Seeds	8N421CLDM	NS,CL,DM	1855	1739	40.4	57	8.7	25.6	15.3
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	2519	1951	40.3	60	8.4	26.3	18.0
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	2365	1945	40.5	60	7.9	24.5	18.0
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	2193	1832	40.5	62	8.0	27.4	18.0
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	2182	1800	40.0	57	9.7	28.1	17.1
Proseed	E-21 CL	HO	2177	--	38.7	65	8.8	26.8	18.0
Proseed	E-23 CL	Trad.	2542	--	39.1	70	9.5	27.7	18.0
Proseed	E-85	HO	2365	--	39.5	60	7.6	25.7	18.0
Seeds 2000	Badger	ConOil, CL	2805	1967	37.4	63	8.8	25.7	18.0
Seeds 2000	Badger HO	HO,CL,ConOil	2733	--	36.0	55	9.3	25.2	18.0
Seeds 2000	Daytona	HO,CL	2174	1702	39.0	56	9.0	27.0	18.0
Seeds 2000	Durango	NS,EX	2140	1949	38.5	54	10.1	26.0	17.1
Seeds 2000	Falcon	NS,EX	2405	2129	41.0	61	9.4	26.2	17.1
Seeds 2000	Torino	NS,CL	2531	2082	40.7	62	9.1	28.8	18.0
Seeds 2000	X5807	Dehul	2402	--	38.7	57	7.6	24.3	18.0
Seeds 2000	X5870	NS,EX,Dehul	2543	--	35.7	58	8.8	23.4	17.1
Seeds 2000	X6814	HO,CL,DM	2069	--	40.0	59	9.1	26.2	18.0
Seeds 2000	X6822	HO,CL,DM	2361	--	39.4	52	8.4	25.5	18.0
Seeds 2000	X6872	NS,CL,DM	2729	--	39.0	56	8.0	26.0	18.0
Seeds 2000	X6878	NS,CL,DM	2201	--	40.1	57	8.4	27.1	18.0
Dahlgren/Sunopta	4421	ConOil	2535	1803	38.5	59	8.8	25.9	18.0

Table 7. 2012 - Sunflower - Oilseed - Mound City, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Pop. x1000
			2012	2-yr Avg.					
			-----(lb/a)-----		(%)	(in)	(%)	(lb/bu)	(Plt/a)
Dahlgren/Sunopta	4421CL	CL,ConOil	2613	--	39.1	58	7.9	26.2	17.4
Syngenta	3158 NS/CL/DM	NS,CL,DM	2287	1916	39.8	58	8.3	26.4	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	2493	2094	40.0	59	8.3	27.3	18.0
Syngenta	3733 NS/DM	NS,DM	2467	1960	40.3	59	8.1	25.8	17.4
Syngenta	3733 NS/DM Pelleted	NS,DM	2288	--	41.5	53	8.8	27.4	18.0
Syngenta	3845 HO	HO	2942	2227	42.1	59	7.8	27.7	18.0
Syngenta	3990 NS/CL/DM	NS,CL,DM	2131	1757	39.3	58	9.2	27.0	17.4
Syngenta	3995 NS/SU	NS,EX	1963	1785	38.6	56	8.2	26.5	18.0
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	2703	--	40.2	61	7.7	25.3	18.0
Syngenta	NX24121	HO,CL,DM	2044	--	38.4	51	8.3	27.9	17.4
Syngenta	NX24122	HO,CL,DM	2656	--	37.7	61	8.8	25.3	18.0
Syngenta	NX24123	HO,CL,DM	2820	--	39.2	60	8.2	25.8	18.0
USDA	894 (check)	Trad.	1633	1290	40.7	49	8.3	25.8	15.7
USDA	cms HA465/RHA 439 (chk)	NS	2070	--	39.8	54	7.7	26.3	18.0
Grand mean			2366	1955	39.4	58	8.6	26.5	17.7
LSD 5%			524	322	1.6	5	1.1	1.5	ns
C.V.			13.7	15.5	2.8	6.0	9.2	3.9	6.2

1Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 7, 2012. Harvested Oct. 11, 2012. Previous crop = wheat.

Table 8. 2012 - Sunflower - Oilseed - Onida, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000	Hulling Screen Test[2]
			2012	2-yr Avg.	3-yr Avg.								
			---------(lb/a)---------			(%)		(in)	(%)	(lb/bu)	(%)	(Plt/a)	
Croplan Genetics	3080 DMR NS	NS,DM	2063	1982	1850	41.3	57	57	6.2	24.8	8	18.0	NT
Croplan Genetics	432 E DMR NS	NS,EX,DM	2363	--	--	39.3	55	60	8.2	24.9	4	18.0	NT
Croplan Genetics	460 E NS	NS,EX	1784	1787	1585	41.8	62	60	7.7	24.6	8	16.0	NT
Croplan Genetics	548 CL DMR NS	NS,CL,DM	1952	1930	--	40.3	61	61	7.3	24.9	5	11.8	NT
Croplan Genetics	559 CL DMR NS	NS,CL,DM	2027	2132	2048	41.4	61	63	8.3	25.0	7	16.7	NT
Genosys	11G04	HO	1672	--	--	39.3	60	63	8.4	24.5	4	15.4	NT
Genosys	11G08	NS	1625	--	--	39.9	59	58	7.1	24.4	8	18.0	NT
Genosys	11G12	HO,CL	1644	--	--	39.0	60	63	9.1	26.5	4	16.6	NT
Genosys	11G13	NS,CL	1770	--	--	38.1	60	56	8.2	24.7	2	18.0	NT
Genosys	12E12	HO,CL	2057	--	--	38.7	59	63	9.3	24.9	8	16.8	NT
Genosys	12E13	HO,CL	1939	--	--	40.1	60	61	8.9	23.6	5	18.0	NT
Genosys	12E14	HO,CL	2251	--	--	39.7	61	65	9.0	23.6	3	18.0	NT
Legend Seeds	LSF 318NCL	NS,CL	1832	--	--	39.8	59	56	7.2	23.7	8	18.0	Excel
Legend Seeds	LSF 7813N	NS	2322	--	--	40.6	60	57	9.0	25.4	7	18.0	Fail
Legend Seeds	LSF 8560NCL	NS,CL	2555	--	--	38.7	60	67	8.5	24.5	3	18.0	Excel
Legend Seeds	LSF 9302HOCL	HO,CL	2509	--	--	39.8	59	51	9.5	25.1	3	18.0	Excel
Legend Seeds	LSF 9501	Trad.	2385	--	--	40.6	61	64	7.5	25.5	3	18.0	Excel
Legend Seeds	LSF 9505NCL	NS,CL	1994	--	--	39.7	62	58	8.6	26.5	1	18.0	Fail
Legend Seeds	LSF 9568NCL	NS,CL	2201	--	--	38.5	61	61	8.0	24.8	7	18.0	Good
Mycogen Seeds	8D310	ConOil	2080	1910	--	39.5	58	59	6.9	24.5	4	18.0	NT
Mycogen Seeds	8D417	ConOil,SS	2478	--	--	39.7	60	45	8.2	25.4	1	18.0	NT
Mycogen Seeds	8H449CLDM	HO,CL,DM	1954	1887	--	41.7	58	59	8.2	26.2	3	16.5	NT
Mycogen Seeds	8N358CLDM	NS,CL,DM	2037	1987	1891	40.7	59	62	6.8	24.7	5	18.0	NT
Mycogen Seeds	8N421CLDM	NS,CL,DM	2218	1907	1829	41.2	60	60	9.1	24.4	1	18.0	NT
Mycogen Seeds	8N510	NS	2262	2235	2088	40.3	60	58	6.6	23.7	3	18.0	NT
Mycogen Seeds	8N678S	SS	2408	--	--	45.7	63	48	10.0	26.7	3	18.0	NT
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	2035	1818	--	41.1	58	62	6.5	23.4	5	18.0	Excel
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	2129	2037	1837	39.4	59	61	6.0	23.0	4	18.0	Excel
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	2181	2214	--	41.3	58	61	6.7	24.6	0	18.0	Excel
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	1827	1809	1677	40.9	59	60	9.0	25.1	4	18.0	Excel
Proseed	E-21 CL	HO	2402	--	--	39.4	60	65	8.1	23.9	4	18.0	NT

Table 8. 2012 - Sunflower - Oilseed - Onida, SD

Company/ Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000	Hulling Screen Test[2]
			2012	2-yr Avg.	3-yr Avg.								
			---------(lb/a)---------			(%)		(in)	(%)	(lb/bu)	(%)	(Plt/a)	
Proseed	E-23 CL	Trad.	2040	--	--	41.3	63	69	9.8	25.3	9	18.0	NT
Proseed	E-85	HO	1827	--	--	40.5	59	63	8.4	25.4	11	18.0	NT
Seeds 2000	Badger	ConOil, CL	2239	2002	1682	38.4	58	60	7.8	23.8	4	18.0	NT
Seeds 2000	Badger HO	HO,CL,ConOil	2079	--	--	37.2	57	57	8.6	23.2	5	18.0	NT
Seeds 2000	Daytona	HO,CL	2037	1878	--	40.5	60	55	8.9	24.8	1	18.0	NT
Seeds 2000	Durango	NS,EX	1808	1787	--	40.4	63	54	8.9	25.5	1	18.0	NT
Seeds 2000	Falcon	NS,EX	2018	2149	--	39.6	60	59	8.1	25.0	5	17.4	NT
Seeds 2000	Torino	NS,CL	2068	1930	--	42.6	62	61	9.0	26.4	4	18.0	NT
Seeds 2000	X5807	Dehul	2084	--	--	38.4	59	55	7.9	22.5	4	18.0	NT
Seeds 2000	X5870	NS,EX,Dehul	2629	--	--	37.2	59	61	7.9	22.8	8	18.0	NT
Seeds 2000	X6814	HO,CL,DM	1918	--	--	39.9	58	62	7.0	24.3	3	18.0	NT
Seeds 2000	X6822	HO,CL,DM	1757	--	--	40.5	58	54	7.9	24.8	4	18.0	NT
Seeds 2000	X6872	NS,CL,DM	1876	--	--	38.5	60	55	7.8	24.6	0	18.0	NT
Seeds 2000	X6878	NS,CL,DM	2347	--	--	40.2	59	61	7.5	25.2	5	18.0	NT
Dahlgren/ Sunopta	4421	ConOil	2054	1875	1758	39.3	58	61	7.3	24.6	5	18.0	NT
Dahlgren/ Sunopta	4421CL	CL,ConOil	1745	--	--	39.5	57	62	7.0	24.5	6	18.0	Excel
Syngenta	3158 NS/CL/DM	NS,CL,DM	2203	2204	--	39.7	60	61	7.1	24.8	10	18.0	NT
Syngenta	3495 NS/CL/ DM	NS,CL,DM	1973	1960	--	41.3	61	63	7.6	25.8	8	18.0	NT
Syngenta	3733 NS/DM	NS,DM	2397	2499	--	41.2	61	56	7.9	25.5	3	18.0	NT
Syngenta	3733 NS/DM Pelleted	NS,DM	2480	--	--	39.7	60	59	6.8	25.1	6	18.0	NT
Syngenta	3845 HO	HO	2812	2533	2379	42.2	58	61	7.9	25.0	4	15.9	NT
Syngenta	3990 NS/CL/ DM	NS,CL,DM	2482	2014	--	39.2	62	60	8.6	25.0	2	18.0	NT
Syngenta	3995 NS/SU	NS,EX	2082	1919	--	38.7	60	57	8.3	24.8	9	15.3	NT
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	2374	--	--	39.3	60	59	7.4	24.6	13	18.0	NT
Syngenta	NX24121	HO,CL,DM	1912	--	--	39.1	54	57	8.2	25.1	4	18.0	NT
Syngenta	NX24122	HO,CL,DM	2096	--	--	38.0	60	65	8.6	24.0	4	18.0	NT
Syngenta	NX24123	HO,CL,DM	2298	--	--	39.7	61	62	8.7	24.2	7	18.0	NT
USDA	894 (check)	Trad.	2095	1810	1633	40.8	59	49	6.9	24.9	7	18.0	NT
Grand mean			2118	2022	1876	40.0	60	59	8.0	24.7	5	17.6	
LSD 5%			512	327	232	1.5	1	4	1.7	1.0	6	ns	
C.V.			15.0	15.2	14.6	2.7	1.4	4.4	15.0	2.9	87.4	8.7	

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Hulling screen test: Excel = > 65% of seed passes over a 14/64 screen; Good = > 75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 11, 2012. Harvested Oct. 9, 2012. Previous crop = wheat.

Table 9. 2012 - Sunflower - Confection Hybrid - Onida, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Days to Flwr	Plant Height	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
			2012	2-yr Avg.						22/64	20/64	18/64	
			-----(lb/a)-----			(in)	(lb/bu)	(%)	(Plt/a)	----------(%)----------			(%)
CHS	12EXP01	EX	2484	--	67	66	17.8	2	14.8	76	89	93	44
CHS	12EXP02	CL	2117	--	70	61	17.9	1	18.6	35	60	80	46
CHS	10EXP01	CL	2310	2068	62	59	17.0	3	18.0	60	80	89	45
Genosys	12GCF05		1577	--	67	67	20.8	4	18.0	31	58	76	51
Genosys	12GCF06		1653	--	65	72	17.5	10	18.0	39	61	75	52
Genosys	12GCF07		1722	--	66	65	17.8	7	13.6	38	65	82	52
Genosys	12GCF08		1349	--	59	58	18.7	1	15.6	39	69	86	48
Genosys	12GCF09		1794	--	65	64	19.5	0	18.0	34	59	75	51
Mycogen Seeds	8C451CP	CL	2075	--	65	62	18.7	0	12.6	47	69	84	49
Nuseed Global	5009		1915	--	64	58	19.7	2	16.5	24	59	84	49
Nuseed Global	NHW11901	DM, EX	1808	--	56	58	19.0	8	18.0	22	53	77	49
Nuseed Global	NHW11902		2303	--	60	56	18.2	3	17.8	39	68	85	49
Nuseed Global	NHW11903	DM	2137	--	61	54	17.9	1	18.0	38	64	82	49
Nuseed Global	NHW11904	DM	1764	--	55	57	20.5	5	18.0	27	59	84	49
Nuseed Global	NHW11906		1832	--	60	57	18.4	2	18.0	38	69	85	48
Nuseed Global	NHW11909		2012	--	59	55	19.1	3	18.0	47	74	88	48
Nuseed Global	NHW11914		2094	--	66	69	19.6	5	18.0	25	56	81	52
Nuseed Global	NHW11921	DM	2058	--	66	65	18.2	5	18.0	30	57	77	46
Nuseed Global	NHW11932	DM	2184	--	64	61	20.2	0	18.0	36	69	85	51
Nuseed Global	NHW11933	DM, EX	1784	--	59	57	18.9	7	18.1	40	70	86	49
Nuseed Global	NHW11936	DM, EX	1758	--	57	54	19.7	6	18.0	33	64	83	51
Nuseed Global	NHW11944	DM, EX	1985	--	59	56	20.1	2	18.0	24	59	83	50
Nuseed Global	X379		2171	--	64	54	19.4	2	18.0	29	62	82	50
Nuseed Global	X4417		1866	--	54	58	16.0	0	16.4	66	80	86	44
Red River Commod.	RRC 2215		1963	1877	63	66	18.1	2	17.8	48	72	85	47
Red River Commod.	RRC 2215 CL	CL	2375	2080	67	69	20.0	0	18.0	30	61	83	48
Red River Commod.	RRC 2217		740	1310	66	56	19.9	0	3.3	46	69	83	50
Seeds 2000	Jaguar	CL	2103	1899	56	57	18.4	2	18.1	52	74	85	46
Seeds 2000	Jaguar DMR	CL,DM	1805	1623	53	62	18.5	3	18.0	44	74	86	47
Seeds 2000	Jaguar II	CL	1896	1703	58	63	17.2	5	18.0	54	77	86	49
Seeds 2000	X4334	CL	1964	--	63	60	18.0	3	18.0	43	73	88	46
Seeds 2000	X4337	CL	2050	--	61	64	17.5	4	17.9	23	51	77	49
Dahlgren/Sunopta	0089CL	CL	2121	--	61	55	16.4	0	18.0	60	79	88	47
Dahlgren/Sunopta	9530		2417	1996	60	61	17.5	3	18.0	44	69	84	47
Dahlgren/Sunopta	9530CL	CL	1882	1829	65	64	19.7	3	17.9	37	64	85	48
Dahlgren/Sunopta	9569		1880	--	61	61	19.3	2	17.4	38	64	82	49
Dahlgren/Sunopta	9579		2162	1774	62	68	18.0	1	18.1	42	70	85	45
Dahlgren/Sunopta	9592CL	CL	2192	--	65	64	18.9	1	17.9	41	63	81	53
USDA	924 (check)		1339	1132	60	63	19.5	3	17.1	17	34	64	54
Grand Mean			1939	1754	62	61	18.7	3	17.1	39	66	83	49
LSD 5%			470	306	1	5	1.9	5	2.0	15	12	7	3
C.V.			17.3	17.6	1.4	6.4	7.3	126.4	8.2	26.5	13.4	6.0	4.8

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Planted June 11, 2012. Harvested October 10, 2012. Previous crop = wheat.

Table 10. 2012 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2012	2-yr Avg.	3-yr Avg.						
			---------(lb/a)---------			(%)	(in)	(%)	(lb/bu)	(%)	(Plt/a)
Croplan Genetics	3080 DMR NS	NS,DM	1894	1855	1779	42.7	53	5.8	27.0	2	18.0
Croplan Genetics	432 E DMR NS	NS,EX,DM	1918	--	--	40.6	51	6.6	27.3	3	18.0
Croplan Genetics	460 E NS	NS,EX	2248	1931	1849	41.8	53	5.8	26.6	3	17.8
Croplan Genetics	548 CL DMR NS	NS,CL,DM	2134	2212	--	40.9	53	5.9	26.8	2	18.0
Croplan Genetics	559 CL DMR NS	NS,CL,DM	2387	2367	2216	41.0	53	6.7	27.6	4	18.0
Legend Seeds	LSF 318NCL	NS,CL	1603	--	--	39.4	49	5.5	26.3	12	18.0
Legend Seeds	LSF 7813N	NS	2060	--	--	41.9	50	7.5	27.8	5	18.0
Legend Seeds	LSF 8560NCL	NS,CL	1996	--	--	39.4	54	6.3	26.5	6	18.0
Legend Seeds	LSF 9302HOCL	HO,CL	1703	--	--	40.6	42	6.0	27.1	0	17.4
Legend Seeds	LSF 9501	Trad.	2176	--	--	40.4	52	6.9	27.0	2	18.0
Legend Seeds	LSF 9505NCL	NS,CL	1955	--	--	41.8	52	6.6	28.4	1	17.4
Legend Seeds	LSF 9568NCL	NS,CL	1903	--	--	38.9	52	6.3	27.2	1	18.0
Mycogen Seeds	8D417	ConOil,SS	2504	--	--	39.9	41	8.0	27.0	1	18.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	2328	2265	--	41.8	52	5.6	27.4	1	17.4
Mycogen Seeds	8N421CLDM	NS,CL,DM	2351	2090	1958	40.4	52	6.9	26.3	1	18.0
Mycogen Seeds	8N510	NS	2424	2150	2078	40.5	52	5.7	26.1	6	18.0
Mycogen Seeds	8N678S	SS	2092	--	--	43.1	44	7.1	26.8	1	18.0
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	1787	1764	--	40.3	55	7.1	25.5	3	18.0
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	2176	2112	2048	39.6	55	5.9	25.0	5	17.6
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	2051	2034	--	40.8	54	6.9	27.4	2	17.4
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	1864	1768	1677	39.5	54	7.8	27.5	3	18.0
Proseed	E-21 CL	HO	2145	--	--	39.2	61	7.0	27.4	3	18.0
Proseed	E-23 CL	Trad.	1934	--	--	40.3	64	7.7	28.5	6	18.0
Proseed	E-85	HO	2071	--	--	40.3	59	5.4	26.6	5	18.0
Seeds 2000	Badger	ConOil, CL	2196	1909	--	38.5	55	7.4	26.0	3	18.0
Seeds 2000	Badger HO	HO,CL,ConOil	1873	--	--	37.4	51	7.2	25.3	5	17.4
Seeds 2000	Daytona	HO,CL	2009	1889	--	39.5	45	6.2	26.2	0	18.0
Seeds 2000	Durango	NS,EX	2097	2040	--	40.4	46	7.2	28.2	4	18.0
Seeds 2000	Falcon	NS,EX	1888	1871	--	40.5	52	6.2	27.2	2	18.0
Seeds 2000	Torino	NS,CL	1871	1973	--	40.1	52	6.4	27.7	1	18.0
Seeds 2000	X5807	Dehul	1731	--	--	38.6	50	7.0	23.9	6	18.0
Seeds 2000	X5870	NS,EX,Dehul	1583	--	--	38.6	57	6.1	25.2	7	18.0
Seeds 2000	X6814	HO,CL,DM	2141	--	--	39.6	58	5.8	26.8	4	18.0
Seeds 2000	X6822	HO,CL,DM	1768	--	--	39.2	45	6.4	25.8	1	18.0
Seeds 2000	X6872	NS,CL,DM	2054	--	--	39.5	50	6.1	26.4	1	17.4
Seeds 2000	X6878	NS,CL,DM	1870	--	--	40.6	53	6.2	26.7	4	18.0
Syngenta	3158 NS/CL/DM	NS,CL,DM	1679	1925	--	40.3	52	7.1	27.3	5	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	1796	1955	--	40.2	55	6.2	28.1	7	17.6
Syngenta	3733 NS/DM	NS,DM	2009	2082	--	40.3	50	6.2	27.5	3	17.6
Syngenta	3733 NS/DM Pelleted	NS,DM	2268	--	--	41.4	49	6.5	27.5	1	18.0
Syngenta	3845 HO	HO	2199	2089	1933	42.5	51	6.0	27.3	1	17.6
Syngenta	3990 NS/CL/DM	NS,CL,DM	2048	2125	--	41.2	54	6.1	27.1	0	18.0
Syngenta	3995 NS/SU	NS,EX	1836	1709	--	39.9	52	6.7	26.8	2	18.0

Table 10. 2012 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2012	2-yr Avg.	3-yr Avg.						
			---------(lb/a)---------			(%)	(in)	(%)	(lb/bu)	(%)	(Plt/a)
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	2001	--	--	39.3	54	7.0	26.9	4	16.9
Syngenta	NX24121	HO,CL,DM	1831	--	--	39.3	48	6.3	27.2	0	18.0
Syngenta	NX24122	HO,CL,DM	1701	--	--	38.7	53	6.6	26.9	8	17.4
Syngenta	NX24123	HO,CL,DM	1890	--	--	41.1	55	6.8	26.6	12	18.0
USDA	894 (check)	Trad.	1830	1655	1523	43.2	48	6.0	26.9	4	16.5
Grand mean			1997	1990	1896	40.3	52	6.5	26.8	3	17.8
LSD 5%			315	227	171	1.6	3	0.9	1.2	4	ns
C.V.			11.3	11.6	11.2	2.8	3.7	9.9	3.2	76.9	3.8

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 12, 2012. Harvested Oct. 15, 2012. Previous crop = wheat.

Table 11. 2012 Sunflower - Oilseed - Averages across Five Locations

Company/ Brand	Hybrid	Hybrid Type[1]	2012 Seed Yield	Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/a)	(%)	(in)	(%)	(lb/bu)	(%)
Croplan Genetics	3080 DMR NS	NS,DM	2057	42.4	55	6.2	26.2	3
Croplan Genetics	432 E DMR NS	NS,EX,DM	2236	39.6	56	7.0	26.4	2
Croplan Genetics	460 E NS	NS,EX	2230	41.4	60	7.0	25.6	3
Croplan Genetics	548 CL DMR NS	NS,CL,DM	2112	40.2	57	6.8	26.2	2
Croplan Genetics	559 CL DMR NS	NS,CL,DM	2279	40.9	59	7.3	26.3	3
Legend Seeds	LSF 318NCL	NS,CL	2004	39.3	53	6.5	25.3	6
Legend Seeds	LSF 7813N	NS	2250	40.9	56	8.2	26.8	3
Legend Seeds	LSF 8560NCL	NS,CL	2082	39.0	61	7.7	25.5	2
Legend Seeds	LSF 9302HOCL	HO,CL	2186	39.9	50	7.6	26.3	1
Legend Seeds	LSF 9501	Trad.	2394	39.8	61	7.2	26.2	2
Legend Seeds	LSF 9505NCL	NS,CL	2122	40.9	58	7.7	26.7	0
Legend Seeds	LSF 9568NCL	NS,CL	1999	38.8	56	7.2	25.8	2
Mycogen Seeds	8D417	ConOil,SS	2297	39.4	44	7.9	26.7	1
Mycogen Seeds	8H449CLDM	HO,CL,DM	2161	42.2	55	7.5	27.1	1
Mycogen Seeds	8N421CLDM	NS,CL,DM	2164	41.0	57	7.4	25.4	0
Pioneer Hi-Bred	Pioneer Brand 63HE60	HO,EX,DM	2049	40.1	58	6.8	25.1	2
Pioneer Hi-Bred	Pioneer Brand 63ME70	NS,EX,DM	2167	39.4	59	6.1	23.8	3
Pioneer Hi-Bred	Pioneer Brand 63ME80	NS,EX,DM	2022	40.8	59	6.7	26.1	1
Pioneer Hi-Bred	Pioneer Brand 64HE01	HO,EX,DM	2075	40.5	56	8.3	26.8	2
Proseed	E-21 CL	HO	2184	39.3	63	7.4	25.9	2
Proseed	E-23 CL	Trad.	2214	40.1	66	8.6	27.4	4
Proseed	E-85	HO	2078	39.8	61	6.6	25.4	4
Seeds 2000	Badger	ConOil, CL	2310	38.1	59	7.3	25.1	3
Seeds 2000	Badger HO	HO,CL,ConOil	2196	36.6	56	7.6	24.3	2
Seeds 2000	Daytona	HO,CL	2111	40.0	53	7.8	26.0	1
Seeds 2000	Durango	NS,EX	1957	39.5	51	8.8	26.3	1
Seeds 2000	Falcon	NS,EX	2068	40.2	57	7.2	26.1	2
Seeds 2000	Torino	NS,CL	2169	41.0	58	7.7	27.7	2
Seeds 2000	X5807	Dehul	2047	38.3	56	6.8	23.1	2
Seeds 2000	X5870	NS,EX,Dehul	2138	36.9	60	6.9	23.8	4
Seeds 2000	X6814	HO,CL,DM	2130	39.8	60	6.9	25.8	2
Seeds 2000	X6822	HO,CL,DM	1880	39.6	52	7.0	25.6	2
Seeds 2000	X6872	NS,CL,DM	2069	39.0	56	7.1	25.4	1
Seeds 2000	X6878	NS,CL,DM	2189	40.6	57	7.1	26.9	2
Syngenta	3158 NS/CL/DM	NS,CL,DM	2119	40.4	56	6.9	26.1	4
Syngenta	3495 NS/CL/DM	NS,CL,DM	2058	40.6	59	6.9	26.8	4
Syngenta	3733 NS/DM	NS,DM	2276	41.1	55	6.8	26.1	1
Syngenta	3733 NS/DM Pelleted	NS,DM	2348	41.0	56	6.6	26.2	2
Syngenta	3845 HO	HO	2576	42.2	56	7.0	26.5	1
Syngenta	3990 NS/CL/DM	NS,CL,DM	2222	40.2	57	7.2	26.4	1

Table 11. 2012 Sunflower - Oilseed - Averages across Five Locations

Company/ Brand	Hybrid	Hybrid Type[1]	2012 Seed Yield	Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/a)	(%)	(in)	(%)	(lb/bu)	(%)
Syngenta	3995 NS/SU	NS,EX	1903	39.5	55	7.3	26.1	2
Syngenta	3158 NS/CL/DM Pelleted	NS,CL,DM	2278	40.1	58	6.5	26.0	4
Syngenta	NX24121	HO,CL,DM	1946	39.0	53	6.8	26.6	1
Syngenta	NX24122	HO,CL,DM	2141	38.1	61	7.1	25.0	4
Syngenta	NX24123	HO,CL,DM	2173	39.9	59	7.3	25.1	5
USDA	894 (check)	Trad.	1885	41.7	50	7.1	26.1	3
Grand mean			2142	40.0	57	7.2	25.9	2
LSD 5%			191	0.7	2	0.5	0.5	2
C.V.			13.5	2.9	5.2	12.1	3.3	115.1

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, Ex= ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 12. 2012 - Sunflower - Confection Hybrid - Means across two locations

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield	Plant Height	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
								22/64	20/64	18/64	
			(lb/a)	(inch)	(lb/bu)	(%)	(Plt/a)	----------(%)----------			(%)
CHS	12EXP01	EX	2408	63	18.7	1	16.4	68	85	91	46
CHS	12EXP02	CL	2136	62	18.3	1	18.3	40	63	83	47
CHS	10EXP01	CL	2323	58	17.9	3	18.0	58	79	88	47
Mycogen Seeds	8C451CP	CL	2069	61	18.5	1	15.3	50	71	85	49
Nuseed Global	5009		2040	59	19.2	2	17.2	37	68	87	49
Nuseed Global	NHW11901	DM, EX	1863	56	18.4	4	15.5	34	62	81	48
Nuseed Global	NHW11902		2232	58	19.1	4	17.5	43	71	84	47
Nuseed Global	NHW11903	DM	2069	56	18.9	1	18.0	41	70	84	47
Nuseed Global	NHW11904	DM	1853	58	19.7	3	18.0	43	70	87	47
Nuseed Global	NHW11906		2099	58	18.4	1	18.0	46	74	87	47
Nuseed Global	NHW11909		2018	58	18.9	3	18.0	49	74	86	48
Nuseed Global	NHW11914		2127	67	18.9	4	18.0	39	66	84	52
Nuseed Global	NHW11921	DM	2012	66	18.6	4	18.0	37	64	81	45
Nuseed Global	NHW11932	DM	2115	59	19.3	0	18.0	42	73	85	51
Nuseed Global	NHW11933	DM, EX	1849	58	18.9	3	18.1	42	72	86	49
Nuseed Global	NHW11936	DM, EX	1818	54	19.4	5	18.0	44	72	85	50
Nuseed Global	NHW11944	DM, EX	1961	57	19.6	2	18.0	35	65	84	44
Nuseed Global	X379		2092	54	19.4	1	18.0	39	69	84	50
Nuseed Global	X4417		1898	55	16.7	0	17.2	61	76	86	45
Red River Commodities	RRC 2215		2095	63	18.8	3	17.9	40	66	79	50
Red River Commodities	RRC 2215 CL	CL	2185	66	20.0	0	18.0	36	68	85	48
Red River Commodities	RRC 2217		852	56	18.4	0	3.1	53	73	84	49
Seeds 2000	Jaguar	CL	2109	58	18.9	2	18.1	51	73	85	48
Seeds 2000	Jaguar DMR	CL,DM	1830	59	18.6	3	18.0	49	76	86	47
Seeds 2000	Jaguar II	CL	2043	61	17.7	4	18.0	54	76	84	48
Seeds 2000	X4334	CL	2101	63	18.5	3	18.0	44	70	83	48
Seeds 2000	X4337	CL	2161	65	18.5	3	17.6	33	60	82	47
USDA	924 (check)		1358	61	18.9	3	17.6	25	41	67	55
Grand Mean			1990	60	18.7	2	17.1	44	69	84	48
LSD 5%			287	4	1.2	ns	1.3	10	8	5	4
C.V.			14.6	6.2	6.6	131	7.6	23.4	11.3	5.8	8.9

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.

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2014 South Dakota Sunflower Variety Trial Results

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Select hybrids with traits that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Consider information from trials close to your production area, but give more weight to relative hybrid performance over many locations and years. Performance averaged over many tests (locations and years) is called "yield stability".

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Onida oilseed test could be repeated in 2015 exactly as it was in 2014, the yield ranking of a hybrid that yielded 3129 lbs/acre and one that yielded 2907 lbs/acre might change ranking since their yield difference (222 lbs/acre) is less than the indicated yield LSD value of 332 lbs/acre. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Onida in 2014. In contrast, a hybrid that yielded 2610 lbs/acre at Onida in 2014 would likely be lower yielding than one that yielded 3129 lbs/acre if the two hybrids were grown again under similar conditions, because their difference in 2014 (3129 – 2610 = 519 lbs/acre) exceeded the LSD value of 332 lbs/acre.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates (low variability) are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition
Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity
Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content
Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance
The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Hybrid disease ratings may be included with some performance trial results. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors
Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2014 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Highmore, Eureka, Onida, and Presho) in 2014. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted at Highmore and Onida. Test locations are indicated on the map in Figure 1. Results from the Bison location are not reported due to poor stands from early season flooding and deer damage. Lists of the hybrids tested in 2014 appear in Tables 1 and 2.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, with a 30 inch row spacing. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of the hybrids entered in the trials was sent pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Bison and Onida were seeded on June 9, 2014. Seeding dates for Eureka, Highmore, and Presho were June 10, 12, and 24, respectively. The previous crop at Eureka and Presho was corn. At all other locations, the previous crop was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were good at Eureka, Onida, and Presho. Bison had poor stands due to early season flooding and also suffered deer damage. Yield results were too variable to report. Stands were variable at Highmore due to weed infestation (herbicide failure). The first replication at Highmore had the poorest stands and was excluded from all analyses.

Climate

A summary of weather conditions near the sunflower test sites is presented in Table 3. The closest weather station to the Presho sunflower plots was at Kennebec. The 2014 growing season was generally cooler than the 30-year average in May through August at all locations. September had near normal temperatures, while October was warmer than average at all sites (Table 3). All locations except Presho had above normal precipitation in June and August. July and October were much drier than normal at all sites. Bison was wetter than average in September, but the other locations had below normal precipitation in September.

Results

Data from each location are contained in Tables 4- 9 and across locations in Tables 10 and 11. Lodging was highest at Highmore. There was no lodging at Presho. Oilseed seed yields were highest at Onida, where 51 hybrids averaged 2416 lbs/acre, with 42.9% oil (Table 6). The lowest oilseed yields (1641 lbs/acre) were recorded at Presho (Table 7). Confection hybrid yields were higher at Onida than at Highmore, averaging 2061 lbs/acre across the 34 hybrids tested (Table 9). In the tables that follow, hybrids are listed alphabetically by brand.

Figure 1. 2014 South Dakota sunflower trial locations.

Table

2014 South Dakota Sunflower Variety Trial Results

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2014.

Company/ Brand	Hybrid	Hybrid Type[1]	Location			
			Eureka	Highmore	Onida	Presho
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	X	X	X	X
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	X	X	X	X
Croplan by Winfield	Croplan 3080	NS	X	X	X	X
Croplan by Winfield	Croplan 432 E	NS,EX,DM	X	X	X	X
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	X	X	X	X
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	X	X	X	X
DuPont Pioneer	P63ME80	NS,EX,DM	X	X	X	X
DuPont Pioneer	P64ME01	NS,EX,DM	X	X	X	X
Genosys	11G08	NS	X	X	X	X
Genosys	12E06	HO,DM	X	X	X	X
Genosys	12E12	HO,CL,DM	X	X	X	X
Genosys	12E13	HO,CL,DM	X	X	X	X
Genosys	12E14	HO,CL,DM	X	X	X	X
Genosys	12G20	HO,CL	X	X	X	X
Genosys	12G25	HO,CL	X	X	X	X
Legend Seeds	LSF 9302HOCL	HO,CL	X	X	X	X
Legend Seeds	LSF 9418HOCL	HO,CL	X	X	X	X
Legend Seeds	LSF 9426NCL	NS,CL	X	X	X	X
Legend Seeds	LSF 9468NCL	NS,CL	X	X	X	X
Legend Seeds	LSF 9502	Trad.	X	X	X	X
Legend Seeds	LSF 9536HOCL	HO,CL	X	X	X	X
Mycogen Seeds	8D310CL	ConOil,CL	X	--	--	--
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	--
Mycogen Seeds	8H570CL	HO,CL	X	--	--	--
Mycogen Seeds	8H859CL	HO,CL	--	--	--	X
Mycogen Seeds	8N421CLDM	NS,CL,DM	X	X	X	--
Mycogen Seeds	8N510	NS	--	X	X	X
Mycogen Seeds	8N668S	NS,SS	--	X	X	X
Mycogen Seeds	8N678S	NS,SS	--	X	X	X
Nuseed Americas Inc	Badger	CL	X	--	X	X
Nuseed Americas Inc	Badger DMR	CL,DM	X	--	X	X
Nuseed Americas Inc	Badger HO	HO,CL,DM	X	--	X	X
Nuseed Americas Inc	Camaro II	NS,CL,DM	X	--	X	X
Nuseed Americas Inc	Cobalt II	HO,CL,DM	X	--	X	X
Nuseed Americas Inc	Falcon	NS,EX	X	--	X	X
Nuseed Americas Inc	Hornet	HO,CL,DM	X	--	X	X
Nuseed Americas Inc	Talon	NS,EX	X	--	X	X
Proseed	E-21 CL	HO,CL	X	X	X	X
Proseed	E-31 CL	HO,CL	X	X	X	X
Proseed	E-362436	HO	X	X	X	X
Proseed	E-85 CL	HO,CL	X	X	X	X
Scherr Seed AgVenture	AF3H681ES	HO,EX,DM	X	X	X	--
Scherr Seed AgVenture	AF3N692ES	NS,EX,DM	X	X	X	--
Scherr Seed Prosun	3H93DM	HO,CL,DM	X	X	X	--

2014 South Dakota Sunflower Variety Trial Results

Company/ Brand	Hybrid	Hybrid Type[1]	Location			
			Eureka	Highmore	Onida	Presho
Scherr Seed Prosun	3N94DM	NS,CL,DM	X	X	X	--
Scherr Seed Prosun	EXF4N14	NS,CL	--	--	X	--
Scherr Seed Prosun	EXF4N15DM	NS,CL,DM	--	--	X	--
Sunopta	4421CL	CL	X	X	X	X
Sunopta	EX25CL	CL	X	X	X	X
Syngenta	3495 NS/CL/DM	NS,CL,DM	X	X	X	X
Syngenta	3732 NS	NS	X	X	X	X
Syngenta	7717 HO/CL/DM	HO,CL,DM	X	X	X	X
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	X	X	X	X
USDA	894 (check)	Trad.	X	X	X	X
USDA	cms HA465/RHA 468	NS	--	X	X	--

[1]Type: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2014.

Company/ Brand	Hybrid	Hybrid Type[1]	Location	
			Highmore	Onida
CHS	12EXP01	EX	X	X
CHS	14EXP001	Trad	X	X
CHS	14EXP002	CL	X	X
CHS	14EXP03		X	X
CHS	14EXP04		X	X
CHS	RH400CL	CL	X	X
Genosys	12GCF05		X	X
Genosys	12GCF07		X	X
Genosys	12GCF12		X	X
Genosys	12GCF18		X	X
Genosys	14GCF01		X	X
Mycogen Seeds	8C451CP	CL+	X	X
Nuseed Global	5009		X	X
Nuseed Global	JAG	CL	X	X
Nuseed Global	JAGDMR	CL,DM	X	X
Nuseed Global	JAGII	CL	X	X
Nuseed Global	JAGXL	CL	X	X
Nuseed Global	NHW12759		X	X
Nuseed Global	NHW12984		X	X
Nuseed Global	NHW12985		X	X
Nuseed Global	NSK12M018	CL	X	X
Nuseed Global	NSK12M048	CL	X	X
Nuseed Global	X4334		X	X
Nuseed Global	X4417		X	X
Nuseed Global	X5334		X	X
Nuseed Global	X9180	EX	X	X
Nuseed Global	X98578		X	X
Red River Commodities	RRC 2215		X	X
Red River Commodities	RRC 2215 CL	CL	X	X
Red River Commodities	RRC 2217 CP	CL+	X	X
Sunopta	9521		X	X
Sunopta	EX011		X	X
Sunopta	EX041		X	X
USDA	924 (check)		X	X

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.

Table 3. Weather data from sites closest to 2014 South Dakota sunflower test plot locations

Location-Month	2014 Temperature Avg Max. (°F)	Avg Min. (°F)	Mean (°F)	Total Precip (in.)	Departure from Normal[1] Max Temp (°F)	Min Temp (°F)	Avg Temp (°F)	Precip %
Bison*								
May	68	42	55	1.51	-1	-1	-1	49
June	71	50	60	8.07	-7	-3	-5	277
July	82	56	69	0.87	-5	-3	-4	37
August	81	59	70	3.26	-5	2	-2	201
September	73	47	60	1.82	-2	0	-1	143
October	63	38	51	0.30	3	4	3	20
Onida 4 NW*								
May	68.8	44.4	56.6	2.50	-1	0	-1	82
June	74.6	52.6	63.6	5.37	-5	-1	-3	161
July	82.6	56.1	69.4	0.93	-5	-4	-4	35
August	81.0	58.0	69.5	2.64	-5	0	-2	112
September	76.0	48.3	62.2	0.75	0	1	1	42
October	63.6	35.7	49.7	0.59	3	1	2	35
Kennebec*								
May	71.4	43.3	57.3	3.64	-2	-3	-2	115
June	79.4	54.4	66.9	3.03	-3	-1	-2	90
July	88.2	57.5	72.8	0.24	-2	-5	-3	10
August	84.6	59.3	72.0	2.28	-4	-1	-2	118
September	80.7	49.2	64.9	0.82	2	0	1	46
October	69.5	36.4	53.0	0.20	6	0	3	13
Highmore 1 W*								
May	68.5	44.3	56.4	3.61	-2	0	-1	131
June	76.3	53.5	64.9	4.01	-3	-1	-2	133
July	82.4	57.4	69.9	1.43	-4	-3	-4	53
August	80.1	58.1	69.1	2.35	-5	0	-3	105
September	76.5	48.8	62.7	0.35	1	0	1	21
October	64.7	39.0	51.9	0.10	4	3	3	7
Eureka*								
May	67.0	46.3	56.6	2.00	-2	2	0	69
June	74.1	53.9	64.0	4.61	-3	0	-2	126
July	80.1	58.2	69.1	0.24	-4	-1	-3	8
August	78.9	58.6	68.8	3.47	-4	1	-2	146
September	72.7	47.5	60.1	0.45	0	1	1	26
October	61.2	34.3	47.8	0.45	4	0	2	26

*Weather observations are from sites as close to the actual 2014 test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2014 observations to 30-yr averages (1981-2010) for each site.

Table 4. 2014 - Sunflower - Oilseed - Eureka, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2014	2-yr[2] Avg.						
			----(lb/a)----		%	in.	%	lb/bu	%	plt/a
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	1993	--	39.2	71	11.4	29.3	4	18.0
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	1984	--	40.3	74	12.6	34.8	3	15.1
Croplan by Winfield	Croplan 3080	NS	2143	--	46.2	64	9.0	30.5	9	18.0
Croplan by Winfield	Croplan 432 E	NS,EX,DM	2400	2467	39.8	70	9.8	32.8	9	18.0
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	2266	--	39.6	72	12.7	32.1	7	18.0
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	2519	2535	42.8	76	10.7	31.6	4	18.0
DuPont Pioneer	P63ME80	NS,EX,DM	1953	2073	45.3	74	10.5	33.2	5	18.0
DuPont Pioneer	P64ME01	NS,EX,DM	2541	--	40.0	81	12.7	31.7	0	18.0
Genosys	11G08	NS	2121	2128	39.2	76	9.8	32.5	9	18.0
Genosys	12E06	HO,DM	2373	--	41.4	78	11.3	34.8	7	18.0
Genosys	12E12	HO,CL,DM	1750	2099	35.2	80	11.7	27.3	5	18.0
Genosys	12E13	HO,CL,DM	2017	2236	39.9	79	10.7	30.6	8	18.0
Genosys	12E14	HO,CL,DM	2062	2429	39.4	80	10.7	31.1	8	18.0
Genosys	12G20	HO,CL	2241	--	39.5	71	9.8	29.4	14	18.0
Genosys	12G25	HO,CL	2345	--	43.5	73	11.0	33.3	8	18.0
Legend Seeds	LSF 9302HOCL	HO,CL	1812	2127	40.4	71	11.2	31.4	6	18.0
Legend Seeds	LSF 9418HOCL	HO,CL	2216	--	41.3	67	10.8	34.0	0	18.0
Legend Seeds	LSF 9426NCL	NS,CL	1709	--	41.4	74	11.5	31.0	27	18.0
Legend Seeds	LSF 9468NCL	NS,CL	2106	--	39.3	66	13.3	30.6	0	18.0
Legend Seeds	LSF 9502	Trad.	2012	--	37.9	74	11.9	27.4	0	18.0
Legend Seeds	LSF 9536HOCL	HO,CL	1756	--	39.5	68	12.8	29.4	13	18.0
Mycogen Seeds	8D310CL	ConOil,CL	2062	--	34.3	76	9.8	31.0	2	18.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	2216	2340	44.8	68	11.3	33.8	1	18.0
Mycogen Seeds	8H570CL	HO,CL	1513	--	44.2	43	10.0	29.7	3	18.0
Mycogen Seeds	8N421CLDM	NS,CL,DM	2020	1937	41.4	71	9.8	29.9	5	18.0
Nuseed Americas Inc	Badger	CL	1404	2105	35.8	85	10.6	28.6	15	18.0
Nuseed Americas Inc	Badger DMR	CL,DM	2125	--	37.3	79	9.7	29.8	10	18.0

2014 South Dakota Sunflower Variety Trial Results

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Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2014	2-yr[2] Avg.						
			----(lb/a)----		%	in.	%	lb/bu	%	plt/a
Nuseed Americas Inc	Badger HO	HO,CL,DM	1649	2191	33.2	73	9.8	29.9	5	18.0
Nuseed Americas Inc	Camaro II	NS,CL,DM	2369	--	43.2	69	12.3	33.2	10	18.0
Nuseed Americas Inc	Cobalt II	HO,CL,DM	1975	--	41.1	69	11.0	32.3	9	18.0
Nuseed Americas Inc	Falcon	NS,EX	1878	2141	42.5	67	12.1	32.7	11	18.0
Nuseed Americas Inc	Hornet	HO,CL,DM	1990	--	40.5	71	12.6	29.0	21	18.0
Nuseed Americas Inc	Talon	NS,EX	1904	--	38.8	67	10.6	29.0	10	18.0
Proseed	E-21 CL	HO,CL	1938	2058	37.4	77	12.6	27.6	5	18.0
Proseed	E-31 CL	HO,CL	2138	--	40.1	75	11.0	31.1	7	18.0
Proseed	E-362436	HO	2383	--	41.7	87	11.3	33.9	4	18.0
Proseed	E-85 CL	HO,CL	2072	--	40.3	81	10.8	28.4	3	18.0
Scherr Seed AgVenture	AF3H681ES	HO,EX,DM	2309	--	41.5	81	12.2	33.6	3	18.0
Scherr Seed AgVenture	AF3N692ES	NS,EX,DM	2552	--	42.6	81	11.9	32.5	2	18.0
Scherr Seed Prosun	3H93DM	HO,CL,DM	1563	--	41.6	69	10.6	31.7	9	18.0
Scherr Seed Prosun	3N94DM	NS,CL,DM	2270	--	42.3	72	11.7	34.3	11	18.0
Sunopta	4421CL	CL	2083	2348	35.4	78	10.9	30.4	0	18.0
Sunopta	EX25CL	CL	1550	--	36.8	46	10.8	28.5	1	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	2334	2413	42.5	76	10.5	34.6	5	18.0
Syngenta	3732 NS	NS	2323	--	43.5	70	10.5	31.6	8	18.0
Syngenta	7717 HO/CL/DM	HO,CL,DM	2489	--	41.8	71	10.8	33.0	6	18.0
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	2277	--	38.2	78	11.8	32.3	10	18.0
USDA	894 (check)	Trad.	1765	1699	44.3	67	10.4	31.9	4	18.0
Grand Mean			2041	2196	40.4	72	11.0	31.2	7	17.9
LSD 5%			319	291	1.9	6	0.9	1.9	11	0.7
C.V.			11.2	12.5	3.3	5.6	6.0	4.3	122.5	2.8

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]2-yr average yield is from 2012 & 2014.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 10, 2014. Harvested Oct. 25, 2014. Previous crop = corn.

Table 5. 2014 - Sunflower - Oilseed - Highmore, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2014	2-yr Avg.	3-yr Avg.						
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(%)	(plt/a)
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	1286	--	--	42.4	57	10.2	30.6	7	9.4
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	2188	--	--	40.7	65	10.0	33.9	0	14.7
Croplan by Winfield	Croplan 3080	NS	1935	1924	--	46.8	57	6.4	32.7	8	18.0
Croplan by Winfield	Croplan 432 E	NS,EX,DM	1983	2016	2197	41.7	60	7.8	34.0	13	18.0
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	2525	--	--	43.9	62	9.4	35.1	8	18.0
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	2411	2270	2339	45.9	67	7.1	30.5	10	18.0
DuPont Pioneer	P63ME80	NS,EX,DM	1694	1724	1782	44.2	60	5.1	31.3	10	18.0
DuPont Pioneer	P64ME01	NS,EX,DM	2420	--	--	41.8	62	9.2	33.3	11	18.0
Genosys	11G08	NS	1817	--	--	41.5	62	6.0	34.2	4	16.8
Genosys	12E06	HO,DM	1428	--	--	42.7	65	8.7	35.0	28	18.0
Genosys	12E12	HO,CL,DM	1909	--	--	39.5	65	8.0	29.8	0	18.0
Genosys	12E13	HO,CL,DM	2053	--	--	41.4	56	6.1	30.1	3	18.0
Genosys	12E14	HO,CL,DM	1621	--	--	42.6	70	6.7	30.2	33	18.0
Genosys	12G20	HO,CL	2035	--	--	42.8	59	5.2	33.0	10	18.0
Genosys	12G25	HO,CL	2026	--	--	45.0	64	6.2	31.0	11	18.0
Legend Seeds	LSF 9302HOCL	HO,CL	1259	1433	1890	42.7	56	7.3	31.3	11	16.8
Legend Seeds	LSF 9418HOCL	HO,CL	1541	1844	--	42.4	55	7.3	28.6	4	15.3
Legend Seeds	LSF 9426NCL	NS,CL	2361	2351	--	43.7	60	9.9	38.3	10	18.0
Legend Seeds	LSF 9468NCL	NS,CL	2191	2198	--	42.6	60	9.1	32.5	10	18.0
Legend Seeds	LSF 9502	Trad.	1825	--	--	42.8	57	7.0	30.5	12	18.0
Legend Seeds	LSF 9536HOCL	HO,CL	2248	2157	--	42.8	64	8.1	32.3	4	18.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	1532	1876	2059	45.3	55	7.3	37.7	53	18.0
Mycogen Seeds	8N421CLDM	NS,CL,DM	1819	1928	2132	44.4	62	6.5	32.1	20	18.0
Mycogen Seeds	8N510	NS	2642	2379	2446	43.8	56	7.0	34.0	0	18.0
Mycogen Seeds	8N668S	NS,SS	2484	2496	--	44.6	36	14.1	34.7	3	18.0
Mycogen Seeds	8N678S	SS	1865	--	--	45.6	46	9.0	36.5	5	18.0
Proseed	E-21 CL	HO,CL	2161	2134	2268	40.1	67	8.0	31.6	12	18.0
Proseed	E-31 CL	HO,CL	2038	1953	--	41.5	61	5.6	29.6	0	18.0
Proseed	E-362436	HO	2149	2028	--	42.4	68	8.2	39.0	10	18.0
Proseed	E-85 CL	HO,CL	1555	1651	--	42.4	64	5.8	31.9	27	18.0
Scherr Seed AgVenture	AF3H681ES	HO,EX,DM	2566	--	--	42.6	67	9.4	34.9	5	18.0
Scherr Seed AgVenture	AF3N692ES	NS,EX,DM	1505	--	--	43.7	65	7.8	32.1	36	18.0
Scherr Seed Prosun	3H93DM	HO,CL,DM	1736	--	--	42.5	59	6.6	30.9	6	18.0
Scherr Seed Prosun	3N94DM	NS,CL,DM	2575	--	--	44.9	63	7.3	33.9	4	18.0
Sunopta	4421CL	HO,CL	1481	1773	--	36.4	65	7.5	31.2	10	18.0
Sunopta	EX25CL	CL	1722	--	--	38.8	39	9.8	34.8	6	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	1496	--	--	42.1	57	7.3	31.6	17	18.0
Syngenta	3732 NS	NS	2285	--	--	43.6	51	8.1	32.5	10	18.0
Syngenta	7717 HO/CL/DM	HO,CL,DM	1752	--	--	44.7	62	6.6	32.4	13	18.0
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	2205	--	--	42.2	63	6.8	29.7	9	18.0

2014 South Dakota Sunflower Variety Trial Results

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2014	2-yr Avg.	3-yr Avg.						
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(%)	(plt/a)
USDA	894 (check)	Trad.	1509	1663	1956	43.9	58	7.4	32.2	12	15.6
USDA	cms HA465/RHA 468	NS	1647	--	--	41.3	60	7.2	28.5	12	18.0
Grand Mean			1914	1989	2119	42.8	59	7.7	32.4	10	17.4
LSD 5%			540	294	245	1.5	5	1.9	3.5	21	2.7
C.V.			17.4	14.1	14.2	2.2	6.0	17.3	6.6	126.9	9.7

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 12, 2014. Harvested Oct. 20, 2014. Previous crop = wheat.

Table 6. 2014 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Test Wt.	Lodge	Hulling Screen Test[2]
			2014	2-yr Avg.	3-yr Avg.							
			--------(lb/a)--------			(%)		(in)	(%)	lb/bu	(%)	
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	2610	--	--	43.8	66	72	6.4	31.6	1.1	NT
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	2763	--	--	42.5	61	78	7.0	36.9	0.0	NT
Croplan by Winfield	Croplan 3080	NS	1959	1702	--	46.3	60	65	6.2	30.2	29.7	NT
Croplan by Winfield	Croplan 432 E	NS,EX,DM	2972	2297	2319	41.8	58	68	7.2	33.2	2.0	Excel
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	2807	--	--	43.6	65	69	6.7	35.1	0.1	NT
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	3129	--	--	45.3	64	77	7.0	31.9	1.6	NT
DuPont Pioneer	P63ME80	NS,EX,DM	2510	2150	2160	44.5	62	71	7.2	31.7	1.2	NT
DuPont Pioneer	P64ME01	NS,EX,DM	2954	--	--	42.8	65	72	7.9	34.2	0.9	NT
Genosys	11G08	NS	2560	1927	1826	40.0	63	72	6.8	32.6	0.3	NT
Genosys	12E06	HO,DM	2683	--	--	42.9	61	83	7.2	36.1	5.7	NT
Genosys	12E12	HO,CL,DM	2478	1892	1947	39.9	63	80	7.3	32.0	2.5	NT
Genosys	12E13	HO,CL,DM	2109	1924	1929	40.5	63	71	6.8	32.4	2.2	NT
Genosys	12E14	HO,CL,DM	2220	2167	2195	41.1	63	80	7.1	31.7	2.9	NT
Genosys	12G20	HO,CL	2519	1893	--	42.6	62	69	6.3	34.9	5.4	NT
Genosys	12G25	HO,CL	2771	--	--	45.5	63	72	6.7	32.3	4.3	NT
Legend Seeds	LSF 9302HOCL	HO,CL	1695	1688	1962	41.3	64	61	6.1	28.4	1.1	Fail
Legend Seeds	LSF 9418HOCL	HO,CL	2120	1984	--	42.2	61	61	6.3	33.3	2.7	Fail
Legend Seeds	LSF 9426NCL	NS,CL	2613	2491	--	44.1	63	79	6.6	36.7	1.9	Fail
Legend Seeds	LSF 9468NCL	NS,CL	2644	2244	--	44.6	67	67	6.9	31.5	2.6	Fail
Legend Seeds	LSF 9502	Trad.	2164	--	--	43.3	66	69	5.7	28.3	8.4	Fail
Legend Seeds	LSF 9536HOCL	HO,CL	2469	2288	--	44.4	68	70	6.6	32.4	5.0	Fail
Mycogen Seeds	8H449CLDM	HO,CL,DM	2765	--	--	47.0	62	70	6.3	35.5	0.7	NT
Mycogen Seeds	8N421CLDM	NS,CL,DM	2273	2139	2165	42.9	62	72	6.1	32.4	7.2	NT
Mycogen Seeds	8N510	NS	2614	2212	2229	42.7	64	68	6.1	31.5	5.8	NT
Mycogen Seeds	8N668S	NS,SS	2461	--	--	46.2	66	47	6.8	34.3	0.8	NT
Mycogen Seeds	8N678S	NS,SS	2151	--	--	47.6	66	50	6.6	35.8	3.5	NT
Nuseed Americas	Badger	CL	2363	1743	1909	39.3	63	78	6.5	31.6	5.5	NT
Nuseed Americas	Badger DMR	CL,DM	2319	1810	--	37.8	59	76	6.3	30.7	4.0	NT

2014 South Dakota Sunflower Variety Trial Results

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Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Test Wt.	Lodge	Hulling Screen Test[2]
			2014	2-yr Avg.	3-yr Avg.							
			--------(lb/a)--------			(%)		(in)	(%)	lb/bu	(%)	
Nuseed Americas	Badger HO	HO,CL,DM	2110	1662	1801	36.4	58	71	6.6	31.8	3.6	NT
Nuseed Americas	Camaro II	NS,CL,DM	2668	2438	--	44.8	63	74	6.4	36.2	2.1	NT
Nuseed Americas	Cobalt II	HO,CL,DM	1811	1779	--	43.3	60	69	6.2	32.7	0.0	NT
Nuseed Americas	Falcon	NS,EX	2427	1984	1995	45.5	63	68	6.7	34.4	2.1	NT
Nuseed Americas	Hornet	HO,CL,DM	2577	2115	--	42.9	66	75	6.5	33.5	3.6	NT
Nuseed Americas	Talon	NS,EX	2032	--	--	41.6	61	74	6.7	29.5	8.9	NT
Proseed	E-21 CL	HO,CL	2268	1740	1961	38.4	62	77	7.5	30.2	0.5	NT
Proseed	E-31 CL	HO,CL	2474	1964	--	40.2	63	74	6.7	30.6	6.0	NT
Proseed	E-362436	HO	2655	1881	--	41.2	62	81	7.3	36.9	0.6	NT
Proseed	E-85 CL	HO,CL	2802	2287	--	41.7	63	81	6.7	32.0	0.0	NT
Scherr Seed AgVenture	AF3H681ES	HO,EX,DM	2788	--	--	43.6	63	79	7.3	34.3	0.0	NT
Scherr Seed AgVenture	AF3N692ES	NS,EX,DM	2907	--	--	44.4	64	78	7.2	34.3	1.1	Good
Scherr Seed Prosun	3H93DM	HO,CL,DM	2185	--	--	43.3	60	69	6.5	31.8	6.2	NT
Scherr Seed Prosun	3N94DM	NS,CL,DM	2849	--	--	45.6	63	73	7.1	37.9	0.4	Fail
Scherr Seed Prosun	EXF4N14	NS,CL	2648	--	--	43.4	66	70	7.5	33.5	2.3	NT
Scherr Seed Prosun	EXF4N15DM	NS,CL,DM	2771	--	--	44.1	64	67	7.5	33.6	1.6	NT
Sunopta	4421CL	CL	2087	2103	1984	38.4	63	76	6.8	32.2	2.6	NT
Sunopta	EX25CL	CL	2352	--	--	41.7	66	49	6.9	33.1	0.0	NT
Syngenta	3495 NS/CL/DM	NS,CL,DM	2202	--	--	42.5	63	70	7.0	34.7	2.3	NT
Syngenta	3732 NS	NS	2584	--	--	46.2	63	67	6.7	34.0	6.7	NT
Syngenta	7717 HO/CL/DM	HO,CL,DM	2070	--	--	43.9	61	71	5.9	34.9	10.0	NT
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	2697	--	--	42.0	63	77	6.6	30.2	3.5	NT
USDA	894 (check)	Trad.	1896	--	--	44.9	61	62	7.0	32.6	1.8	NT
USDA	cms HA465/RHA 468	NS	2121	--	--	41.5	62	78	6.8	34.2	6.6	NT
Grand Mean			2416	2019	2027	42.9	63	70	6.8	32.9	3.2	
LSD 5%			332	284	254	1.3	1	4	0.6	2.8	7.5	
C.V.			9.8	13.2	14.1	2.2	1.0	4.3	6.1	6.1	166.1	

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Hulling screen test: Excel = ≥ 65% of seed passes over a 14/64 screen; Good = ≥ 75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 9, 2014. Harvested Oct. 27, 2014. Previous crop = wheat.

2014 South Dakota Sunflower Variety Trial Results

Table 7. 2014 - Sunflower - Oilseed - Presho, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Pop. x1000
			2014	2-yr Avg.	3-yr Avg.					
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(plt/a)
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	1521	--	--	39.7	57	9.8	27.9	14.6
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	1576	--	--	39.1	62	11.8	32.6	9.3
Croplan by Winfield	Croplan 3080	NS	1749	1922	--	45.5	50	7.6	30.7	18.0
Croplan by Winfield	Croplan 432 E	NS,EX,DM	1825	2057	2010	41.8	54	8.7	33.0	18.0
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	1717	--	--	39.1	57	11.9	31.2	18.0
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	1920	2066	2173	43.0	58	10.2	30.7	18.0
DuPont Pioneer	P63ME80	NS,EX,DM	1842	1886	1941	43.3	57	10.3	30.8	18.0
DuPont Pioneer	P64ME01	NS,EX,DM	1809	--	--	40.0	60	13.2	30.5	18.0
Genosys	11G08	NS	1858	--	--	40.4	56	8.5	32.4	18.0
Genosys	12E06	HO,DM	1823	--	--	42.4	65	10.7	35.3	18.0
Genosys	12E12	HO,CL,DM	1536	--	--	35.2	57	12.7	29.4	18.0
Genosys	12E13	HO,CL,DM	1721	--	--	38.2	56	10.3	30.2	18.0
Genosys	12E14	HO,CL,DM	1778	--	--	37.6	61	10.8	28.6	18.0
Genosys	12G20	HO,CL	1697	--	--	43.3	51	8.5	30.8	18.0
Genosys	12G25	HO,CL	1935	--	--	44.8	54	10.3	33.2	16.0
Legend Seeds	LSF 9302HOCL	HO,CL	1737	1684	1690	39.8	50	12.0	30.0	18.0
Legend Seeds	LSF 9418HOCL	HO,CL	1465	1747	--	39.7	52	10.8	28.3	18.0
Legend Seeds	LSF 9426NCL	NS,CL	1824	1994	--	40.6	58	12.0	32.0	18.0
Legend Seeds	LSF 9468NCL	NS,CL	1677	1834	--	41.1	54	18.8	29.9	18.0
Legend Seeds	LSF 9502	Trad.	1653	--	--	38.7	56	10.1	25.9	18.0
Legend Seeds	LSF 9536HOCL	HO,CL	1927	1935	--	41.5	57	13.9	28.6	18.0
Mycogen Seeds	8H859CL	HO,CL	1509	--	--	41.3	58	10.2	31.7	18.0
Mycogen Seeds	8N510	NS	1779	1806	2012	39.6	53	10.8	29.7	18.0
Mycogen Seeds	8N668S	NS,SS	1660	1748	--	44.7	37	18.8	31.8	17.4
Mycogen Seeds	8N678S	NS,SS	1482	--	--	45.0	42	13.9	31.4	18.0
Nuseed Americas Inc	Badger	CL	1580	1579	1784	36.6	58	10.2	28.3	18.0
Nuseed Americas Inc	Badger DMR	CL,DM	1608	1733	--	35.5	60	9.5	30.3	18.0
Nuseed Americas Inc	Badger HO	HO,CL,DM	1610	1595	1688	35.0	56	10.8	28.8	18.0
Nuseed Americas Inc	Camaro II	NS,CL,DM	1444	1732	--	41.9	54	11.3	32.8	18.0
Nuseed Americas Inc	Cobalt II	HO,CL,DM	1266	1408	--	39.7	53	9.5	30.1	18.0
Nuseed Americas Inc	Falcon	NS,EX	1504	1649	1728	41.3	53	10.3	30.5	17.1
Nuseed Americas Inc	Hornet	HO,CL,DM	1820	2001	--	40.2	56	11.7	30.0	17.4
Nuseed Americas Inc	Talon	NS,EX	1565	--	--	39.4	53	11.7	28.6	18.0

2014 South Dakota Sunflower Variety Trial Results

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Pop. x1000
			2014	2-yr Avg.	3-yr Avg.					
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(plt/a)
Proseed	E-21 CL	HO,CL	1585	1617	1793	35.6	57	13.4	29.4	18.0
Proseed	E-31 CL	HO,CL	1453	1449	--	38.1	56	10.6	28.4	17.1
Proseed	E-362436	HO	1813	1866	--	42.5	63	10.6	33.0	18.0
Proseed	E-85 CL	HO,CL	1630	1788	--	38.2	61	10.7	28.1	18.0
Sunopta	4421CL	CL	1639	1745	--	34.9	59	8.3	29.4	18.0
Sunopta	EX25CL	CL	1574	--	--	38.9	42	10.2	29.6	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	1712	--	--	41.3	56	8.2	33.4	18.0
Syngenta	3732 NS	NS	1832	--	--	45.0	55	10.4	32.3	18.0
Syngenta	7717 HO/CL/DM	HO,CL,DM	1680	--	--	41.5	56	8.7	32.0	18.0
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	1880	--	--	40.2	59	10.3	30.5	18.0
USDA	894 (check)	Trad.	1499	1421	1557	43.8	46	9.8	30.4	18.0
Grand Mean			1641	1761	1838	40.4	55	11.1	30.5	17.6
LSD 5%			250	165	152	1.0	3	1.2	1.5	1.6
C.V.			10.9	9.6	10.6	1.8	4.0	8.0	3.5	6.6

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant. SS=Short Stature. HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 24, 2014. Harvested Oct. 29, 2014. Previous crop = corn.

Table 8. 2014 Sunflower - Confection - Highmore, SD (1 of 2)

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Plant Height	Harv. Moist.	Test Wt.
			2014	2-yr Avg.	3-yr Avg.			
			-------(lbs/a)-------			(inch)	(%)	(lb/bu)
CHS	12EXP01	EX	2169	1934	2067	73	7.5	21.2
CHS	14EXP001	Trad	1557	--	--	72	5.6	21.0
CHS	14EXP002	CL	1986	--	--	71	6.5	21.7
CHS	14EXP03		1786	--	--	72	7.5	18.9
CHS	14EXP04		1890	--	--	74	7.6	20.2
CHS	RH400CL	CL	1514	--	--	58	5.6	19.9
Genosys	12GCF05		1037	1189	--	72	7.3	17.8
Genosys	12GCF07		1166	--	--	68	7.4	17.6
Genosys	12GCF12		1532	1472	--	86	8.2	20.4
Genosys	12GCF18		987	--	--	67	8.0	18.6
Genosys	14GCF01		1167	--	--	74	5.3	17.9
Mycogen Seeds	8C451CP	CL+	1795	1714	1830	66	6.2	19.2
Nuseed Global	5009		1523	1678	1841	70	7.4	21.7
Nuseed Global	JAG	CL	2100	1932	1993	64	6.0	18.2
Nuseed Global	JAGDMR	CL,DM	2238	1972	1933	62	4.9	21.2
Nuseed Global	JAGII	CL	1692	1618	1809	68	6.0	19.7
Nuseed Global	JAGXL	CL	1619	1496	--	75	6.8	17.4
Nuseed Global	NHW12759		1532	--	--	64	5.1	18.6
Nuseed Global	NHW12984		1384	--	--	69	11.1	22.5
Nuseed Global	NHW12985		1574	--	--	66	6.4	18.7
Nuseed Global	NSK12M018	CL	1814	--	--	70	8.0	21.7
Nuseed Global	NSK12M048	CL	1725	1697	--	71	5.5	17.2
Nuseed Global	X4334		1651	1350	1646	69	6.6	18.6
Nuseed Global	X4417		1772	1559	1683	61	5.5	18.2
Nuseed Global	X5334		1378	--	--	73	7.1	20.1
Nuseed Global	X9180	EX	2336	--	--	64	6.9	21.6
Nuseed Global	X98578		1472	1465	--	71	6.5	19.2
Red River Commod.	RRC 2215		1794	1945	2039	71	6.9	18.8
Red River Commod.	RRC 2215 CL	CL	1611	1563	1707	76	5.1	19.2
Red River Commod.	RRC 2217 CP	CL+	1893	1670	--	70	7.1	19.2
Sunopta	9521		1720	1591	--	74	5.1	18.6
Sunopta	EX011		2354	--	--	68	9.0	22.4
Sunopta	EX041		1408	--	--	73	6.1	22.9
USDA	924 (check)		1258	1216	1270	72	3.7	18.4
Grand Mean			1660	1615	1802	70	6.6	19.7
LSD 5%			524	317	237	6	1.4	3.0
C.V.			19.4	18.4	16.6	5.6	14.9	9.4

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Seed yield is reported at 10% moisture.
Planted June 12, 2014. Harvested Oct. 20, 2014. Previous crop = wheat.

Table 8. 2014 Sunflower - Confection - Highmore, SD (2 of 2)

Company/Brand	Hybrid	Hybrid Type[1]	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
					22/64	20/64	18/64	
			(%)	(plt/a)	---------(%)---------			(%)
CHS	12EXP01	EX	0.0	18.0	64	80	86	49
CHS	14EXP001	Trad	3.2	16.5	58	79	83	45
CHS	14EXP002	CL	2.7	18.0	46	65	76	52
CHS	14EXP03		2.2	18.0	60	79	86	46
CHS	14EXP04		2.2	18.0	67	81	86	47
CHS	RH400CL	CL	22.0	18.0	48	70	82	49
Genosys	12GCF05		1.1	18.0	51	68	76	47
Genosys	12GCF07		1.6	18.0	42	68	81	59
Genosys	12GCF12		2.7	18.0	60	72	77	53
Genosys	12GCF18		1.1	17.1	60	78	86	54
Genosys	14GCF01		7.5	18.0	49	72	84	50
Mycogen Seeds	8C451CP	CL+	3.8	18.0	54	71	78	54
Nuseed Global	5009		2.2	18.0	63	80	88	46
Nuseed Global	JAG	CL	9.1	18.0	57	75	85	54
Nuseed Global	JAGDMR	CL,DM	6.5	18.0	53	77	89	51
Nuseed Global	JAGII	CL	4.8	18.0	58	76	85	56
Nuseed Global	JAGXL	CL	3.2	18.0	48	67	80	52
Nuseed Global	NHW12759		4.3	18.0	49	68	79	51
Nuseed Global	NHW12984		0.0	4.7	66	82	88	52
Nuseed Global	NHW12985		0.5	17.1	56	72	78	52
Nuseed Global	NSK12M018	CL	0.5	18.0	58	76	84	50
Nuseed Global	NSK12M048	CL	2.7	18.0	65	77	82	49
Nuseed Global	X4334		2.7	18.0	46	65	76	52
Nuseed Global	X4417		8.6	18.0	63	78	85	51
Nuseed Global	X5334		3.8	16.5	63	78	83	49
Nuseed Global	X9180	EX	6.5	18.0	40	67	85	57
Nuseed Global	X98578		5.4	18.0	55	76	85	50
Red River Commod.	RRC 2215		4.3	18.0	56	71	77	51
Red River Commod.	RRC 2215 CL	CL	6.5	18.0	50	70	79	55
Red River Commod.	RRC 2217 CP	CL+	3.2	18.0	57	74	82	55
Sunopta	9521		4.8	18.0	59	77	84	51
Sunopta	EX011		0.0	13.1	72	84	87	46
Sunopta	EX041		3.8	18.0	64	77	81	45
USDA	924 (check)		6.5	18.0	9	22	54	58
Grand Mean			4.1	17.3	55	73	82	51
LSD 5%			ns	2.6	13	9	6	5
C.V.			143.1	9.3	11.9	5.9	3.9	4.7

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Seed yield is reported at 10% moisture.
Planted June 12, 2014. Harvested Oct. 20, 2014. Previous crop = wheat.

Table 9. 2014 Sunflower - Confection - Onida, SD (1 of 2)

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Days to Flower	Plant Height	Harv. Moist.
			2014	2-yr Avg.	3-yr Avg.			
			-------(lbs/a)-------				(inch)	(%)
CHS	12EXP01	EX	2406	2228	2313	66	74	8.6
CHS	14EXP001	Trad	2319	--	--	64	81	7.6
CHS	14EXP002	CL	2789	--	--	65	81	8.3
CHS	14EXP03		1843	--	--	67	77	8.8
CHS	14EXP04		2099	--	--	66	77	8.4
CHS	RH400CL	CL	1724	--	--	60	69	7.7
Genosys	12GCF05		1378	1479	1512	71	81	8.0
Genosys	12GCF07		1847	--	--	70	81	8.6
Genosys	12GCF12		1495	1689	--	68	86	8.6
Genosys	12GCF18		1649	--	--	71	78	8.8
Genosys	14GCF01		1439	--	--	62	80	5.3
Mycogen Seeds	8C451CP	CL+	2327	2004	2028	67	75	6.4
Nuseed Global	5009		2007	1886	1896	67	77	9.3
Nuseed Global	JAG	CL	2279	2152	2136	61	74	7.0
Nuseed Global	JAGDMR	CL,DM	1934	1851	1836	58	71	7.4
Nuseed Global	JAGII	CL	1657	1644	1728	62	75	9.3
Nuseed Global	JAGXL	CL	1858	1734	--	64	84	8.8
Nuseed Global	NHW12759		1906	--	--	62	69	8.7
Nuseed Global	NHW12984		1670	--	--	67	78	13.8
Nuseed Global	NHW12985		1921	--	--	66	79	8.0
Nuseed Global	NSK12M018	CL	2194	--	--	67	83	9.3
Nuseed Global	NSK12M048	CL	2403	1946	--	64	85	8.0
Nuseed Global	X4334		2309	1837	1879	67	81	8.9
Nuseed Global	X4417		1598	1363	1531	60	64	6.4
Nuseed Global	X5334		2114	--	--	65	79	8.5
Nuseed Global	X9180	EX	2564	--	--	61	73	6.6
Nuseed Global	X98578		2172	1590	--	68	81	8.0
Red River Commod.	RRC 2215		2636	2492	2315	67	78	7.0
Red River Commod.	RRC 2215 CL	CL	2761	2314	2334	63	81	7.3
Red River Commod.	RRC 2217 CP	CL+	2283	2032	--	67	77	7.6
Sunopta	9521		2642	2369	--	64	76	8.4
Sunopta	EX011		2309	--	--	66	79	7.6
Sunopta	EX041		2374	--	--	64	78	6.6
USDA	924 (check)		1168	1014	1122	64	82	5.4
Grand Mean			2061	1868	1886	65	78	8.0
LSD 5%			473	328	268	1	4	2.0
C.V.			16.4	17.3	17.3	1.0	4.1	17.9

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Seed yield is reported at 10% moisture.
Planted June 6, 2014. Harvested Oct. 27, 2014. Previous crop = wheat.

Table 9. 2014 Sunflower - Confection - Onida, SD (2 of 2)

Company/Brand	Hybrid	Hybrid Type[1]	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
						22/64	20/64	18/64	
			(lb/bu)	(%)	(Plt/A)	---------(%)---------			(%)
CHS	12EXP01	EX	21.3	2.0	18.0	66	76	78	51
CHS	14EXP001	Trad	19.1	2.8	18.0	74	84	86	49
CHS	14EXP002	CL	18.5	2.8	18.0	54	68	74	53
CHS	14EXP03		23.9	3.2	18.0	64	77	82	46
CHS	14EXP04		23.3	3.2	18.0	71	82	85	49
CHS	RH400CL	CL	20.8	10.1	18.0	67	80	84	53
Genosys	12GCF05		19.2	0.8	18.0	50	68	77	56
Genosys	12GCF07		20.7	0.0	18.0	48	67	77	55
Genosys	12GCF12		22.1	6.9	18.0	53	65	70	52
Genosys	12GCF18		22.4	0.0	18.0	57	76	85	55
Genosys	14GCF01		19.6	12.5	18.0	58	78	87	53
Mycogen Seeds	8C451CP	CL+	20.4	1.6	18.0	47	68	77	55
Nuseed Global	5009		19.7	1.6	18.0	56	76	86	52
Nuseed Global	JAG	CL	22.5	8.5	18.0	60	78	85	56
Nuseed Global	JAGDMR	CL,DM	22.6	10.5	18.0	55	75	83	54
Nuseed Global	JAGII	CL	21.7	15.3	18.0	60	74	82	56
Nuseed Global	JAGXL	CL	19.3	11.7	18.0	52	74	84	52
Nuseed Global	NHW12759		18.6	8.5	18.0	72	80	84	52
Nuseed Global	NHW12984		22.1	0.0	10.8	64	79	85	50
Nuseed Global	NHW12985		18.2	2.0	18.0	58	67	71	55
Nuseed Global	NSK12M018	CL	21.6	6.5	18.0	54	76	83	50
Nuseed Global	NSK12M048	CL	18.4	3.6	18.0	71	83	86	55
Nuseed Global	X4334		22.0	4.8	18.0	60	69	76	54
Nuseed Global	X4417		19.5	16.5	18.0	70	79	81	54
Nuseed Global	X5334		23.2	9.3	18.0	59	78	83	54
Nuseed Global	X9180	EX	18.8	5.2	18.0	43	68	83	62
Nuseed Global	X98578		19.9	3.2	18.0	70	82	86	51
Red River Commod.	RRC 2215		20.7	1.2	18.0	60	74	77	53
Red River Commod.	RRC 2215 CL	CL	23.4	1.2	18.0	68	81	85	57
Red River Commod.	RRC 2217 CP	CL+	20.7	0.8	18.0	63	76	81	58
Sunopta	9521		20.4	4.4	18.0	73	81	85	51
Sunopta	EX011		22.0	1.2	18.0	73	83	86	52
Sunopta	EX041		19.9	1.4	16.9	72	79	81	46
USDA	924 (check)		24.1	10.9	18.0	16	33	63	58
Grand Mean			20.9	5.1	17.8	60	75	81	53
LSD 5%			2.9	5.2	ns	13	10	8	4
C.V.			9.8	71.6	2.3	11.0	6.9	4.7	3.5

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Seed yield is reported at 10% moisture.
Planted June 6, 2014. Harvested Oct. 27, 2014. Previous crop = wheat.

Table 10. 2014 - Sunflower - Oilseed - Averaged over four SD locations

Brand	Hybrid	Hybrid Type[1]	Seed Yield	Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			(lbs/a)	(%)	(in)	(%)	lb/bu	(%)	(plt/a)
Croplan by Winfield	Croplan 13-652 CL	HO,CL,DM	1852	41.3	65	9.4	29.8	3	14.8
Croplan by Winfield	Croplan 14-572 CL	HO,CL,DM	2128	40.6	70	10.3	34.6	0	14.0
Croplan by Winfield	Croplan 3080	NS	1947	46.2	59	7.3	31.0	12	18.0
Croplan by Winfield	Croplan 432 E	NS,EX,DM	2295	41.3	63	8.4	33.2	6	18.0
Croplan by Winfield	Croplan 545 CL	NS,CL,DM	2328	41.6	65	10.2	33.4	4	18.0
Croplan by Winfield	Croplan 559 CL	NS,CL,DM	2495	44.2	70	8.8	31.2	4	18.0
DuPont Pioneer	P63ME80	NS,EX,DM	2000	44.3	65	8.3	31.8	4	18.0
DuPont Pioneer	P64ME01	NS,EX,DM	2431	41.1	69	10.7	32.4	2	18.0
Genosys	11G08	NS	2089	40.3	66	7.8	32.9	3	17.7
Genosys	12E06	HO,DM	2077	42.3	73	9.5	35.3	10	18.0
Genosys	12E12	HO,CL,DM	1918	37.5	70	9.9	29.6	1	18.0
Genosys	12E13	HO,CL,DM	1975	40.0	65	8.5	30.8	3	18.0
Genosys	12E14	HO,CL,DM	1920	40.2	73	8.8	30.4	11	18.0
Genosys	12G20	HO,CL	2123	42.1	62	7.5	32.0	7	18.0
Genosys	12G25	HO,CL	2269	44.7	66	8.5	32.5	6	17.4
Legend Seeds	LSF 9302HOCL	HO,CL	1626	41.1	60	9.2	30.3	5	17.7
Legend Seeds	LSF 9418HOCL	HO,CL	1836	41.4	59	8.8	31.0	0	17.3
Legend Seeds	LSF 9426NCL	NS,CL	2127	42.5	67	10.0	34.5	10	18.0
Legend Seeds	LSF 9468NCL	NS,CL	2155	41.9	61	12.0	31.1	2	18.0
Legend Seeds	LSF 9502	Trad.	1913	40.7	64	8.7	28.0	4	18.0
Legend Seeds	LSF 9536HOCL	HO,CL	2100	42.0	65	10.4	30.7	5	18.0
Proseed	E-21 CL	HO,CL	1988	37.9	70	10.4	29.7	4	18.0
Proseed	E-31 CL	HO,CL	2026	40.0	67	8.5	29.9	2	17.8
Proseed	E-362436	HO	2250	41.9	75	9.4	35.7	4	18.0
Proseed	E-85 CL	HO,CL	2015	40.6	72	8.5	30.1	7	18.0
Sunopta	4421CL	CL	1823	36.3	70	8.4	30.8	3	18.0
Sunopta	EX25CL	CL	1799	39.1	44	9.4	31.5	2	18.0
Syngenta	3495 NS/CL/DM	NS,CL,DM	1936	42.1	65	8.3	33.6	6	18.0
Syngenta	3732 NS	NS	2256	44.6	61	8.9	32.6	6	18.0
Syngenta	7717 HO/CL/DM	HO,CL,DM	1998	43.0	65	8.0	33.1	7	18.0
Syngenta	NX34240 HO/CL/DM	HO,CL,DM	2265	40.7	69	8.9	30.7	6	18.0
USDA	894 (check)	Trad.	1667	44.3	58	8.7	31.7	4	17.4
Grand Mean			2051	41.5	65	9.1	31.8	5	17.7
LSD 5%			177	0.7	2	0.6	1.2	6	0.7
C.V.			11.9	2.5	5.0	9.8	5.3	164.5	5.8

[1]Type: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

2014 South Dakota Sunflower Variety Trial Results

Table 11. 2014 - Sunflower - Confection - Averaged over two SD locations

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
									22/64	20/64	18/64	
			(lb/a)	(inch)	(%)	lb/bu	(%)	(plt/a)	---------(%)---------			(%)
CHS	12EXP01	EX	2287	73	8.0	21.3	1	18.0	65	78	82	50
CHS	14EXP001	Trad	1938	76	6.6	20.0	3	17.3	66	81	85	47
CHS	14EXP002	CL	2388	76	7.4	20.1	3	18.0	50	67	75	53
CHS	14EXP03		1815	74	8.1	21.4	3	18.0	62	78	84	46
CHS	14EXP04		1995	75	8.0	21.8	3	18.0	69	81	86	48
CHS	RH400CL	CL	1619	64	6.6	20.4	16	18.0	58	75	83	51
Genosys	12GCF05		1208	77	7.7	18.5	1	18.0	50	68	76	51
Genosys	12GCF07		1506	75	8.0	19.1	1	18.0	45	67	79	57
Genosys	12GCF12		1514	86	8.4	21.3	5	18.0	56	68	73	52
Genosys	12GCF18		1318	73	8.4	20.5	1	17.6	58	77	85	54
Genosys	14GCF01		1303	77	5.3	18.7	10	18.0	53	75	85	51
Mycogen Seeds	8C451CP	CL+	2061	70	6.3	19.8	3	18.0	50	69	77	54
Nuseed Global	5009		1765	73	8.4	20.7	2	18.0	59	78	87	49
Nuseed Global	JAG	CL	2190	69	6.5	20.3	9	18.0	59	76	85	55
Nuseed Global	JAGDMR	CL,DM	2086	67	6.1	21.9	8	18.0	54	76	86	52
Nuseed Global	JAGII	CL	1674	72	7.7	20.7	10	18.0	59	75	84	56
Nuseed Global	JAGXL	CL	1738	80	7.8	18.3	7	18.0	50	70	82	52
Nuseed Global	NHW12759		1719	67	6.9	18.6	6	18.0	61	74	81	51
Nuseed Global	NHW12984		1527	73	12.4	22.3	0	7.7	65	81	87	51
Nuseed Global	NHW12985		1747	72	7.2	18.4	1	17.6	57	69	74	54
Nuseed Global	NSK12M018	CL	2004	77	8.7	21.6	3	18.0	56	76	84	50
Nuseed Global	NSK12M048	CL	2064	78	6.7	17.8	3	18.0	68	80	84	52
Nuseed Global	X4334		1980	75	7.8	20.3	4	18.0	53	67	76	53
Nuseed Global	X4417		1685	63	6.0	18.8	13	18.0	66	78	83	52
Nuseed Global	X5334		1746	76	7.8	21.6	7	17.3	61	78	83	52
Nuseed Global	X9180	EX	2450	69	6.7	20.2	6	18.0	42	67	84	60
Nuseed Global	X98578		1822	76	7.2	19.6	4	18.0	62	79	86	51
Red River Commod.	RRC 2215		2215	74	7.0	19.7	3	18.0	58	72	77	52
Red River Commod.	RRC 2215 CL	CL	2186	78	6.2	21.3	4	18.0	59	75	82	56
Red River Commod.	RRC 2217 CP	CL+	2088	74	7.4	20.0	2	18.0	60	75	81	56
Sunopta	9521		2181	75	6.7	19.5	5	18.0	66	79	85	51
Sunopta	EX011		2331	74	8.3	22.2	1	15.5	73	83	87	49
Sunopta	EX041		1891	75	6.4	21.4	3	17.5	68	78	81	45
USDA	924 (check)		1213	77	4.6	21.2	9	18.0	12	28	59	58
Grand Mean			1860	74	7.3	20.3	5	17.5	57	74	81	52
LSD 5%			352	4	1.2	2.1	5	1.2	9	7	5	3
C.V.			17.8	4.8	16.8	9.7	102.8	6.3	11.4	6.4	4.3	4.2

[1]Type: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant.
Seed yield is reported at 10% moisture.

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FEBRUARY 2014

SDSU EXTENSION

List of Tables

2013 South Dakota Sunflower Hybrid Performance Trials

Oilseed and Confection

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Select hybrids with traits that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Consider information from trials close to your production area, but give more weight to relative hybrid performance over many locations and years. Performance averaged over many tests (locations and years) is called "yield stability".

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions.

For example, if the Presho oilseed test (Table 7) could be repeated in 2014 exactly as it was in 2013, the yield ranking of a hybrid that yielded 2288 lbs/A and one that yielded 2095 lbs/A might change ranking since their yield difference (193 lbs/A) is less than the indicated yield LSD value of 218 lbs/A. Within the accuracy level of the experiment, there was no statistical difference in yield between the two hybrids when grown under the conditions that existed at Presho in 2013. In contrast, a hybrid that yielded 2029 lbs/A at Presho in 2013 would likely be lower yielding than one that yielded 2288 lbs/A if the two hybrids were grown again under similar conditions, because their difference in 2013 (2288 – 2029 = 259 lbs/A) exceeded the LSD value of 218 lbs/A.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates (low variability) are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Hybrid disease ratings may be included with some performance trial results. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for

crushing, hulling, or birdfeed.

2013 Trial Procedures

Locations and Hybrids

Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Bison, Harrold, Eureka, Onida, and Presho) in 2013. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, high stearic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted at Harrold and Onida. Test locations are indicated on the map in Figure 1. Trial sites for each of the hybrids tested in 2013 appear in Tables 1 and 2.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, with a 30 inch row spacing. The plot layout was in a randomized complete block design with four replications at each location. The experiments were randomized for a nearest neighbors statistical analysis, which removes effects of field trends (see Crop Science 34:62-66).

Seed of most of the hybrids entered in the trials was sent pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding date at Bison was June 5th. Eureka was planted on June 11th, Presho and Harrold on June 14th and Onida on June 15th. The previous crop at Eureka and Harrold was corn. At all other locations, the previous crop was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were good at all locations. The Eureka site was later abandoned due to severe lodging and bird damage.

Areas of stunted plants (from unknown causes) in the oilseed trial at Onida became obvious as the plants approached flowering. Stunting was most severe in the first replication, so that rep was excluded from all analyses, as were any stunted plots in the other three replications. Hybrids that did not have at least two good replications of data were also excluded. Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Plant height and lodging notes were taken at all locations immediately before harvest. At all locations except Bison, the center two rows of each 4-row plot were harvested with a Kincaid 8-XP plot combine fitted with a two-row all row crop header and HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Plots at Bison were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGage. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot for oil analysis.

Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens. A one-pint sub-sample of seed from each plot of the Harrold and Onida confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Climate

A summary of climate conditions near the sunflower test sites is presented in Table 3. The closest weather station to the Presho sunflower plots was at Kennebec and the station closest to Harrold was located 1 mile west of Highmore. The 2013 growing season was generally cooler than the 30-year average in May through July at all locations. August had a cooler maximum temperature but a warmer minimum temperature than normal and September was much warmer than normal at all sites, while October was cooler (Table 3). All locations had above normal precipitation in May, but below normal precipitation in June. Bison remained drier than average in July but then was wetter than average for the remainder of the season. Both July and August were wetter than normal at Onida, Presho, and Harrold, while September was drier. Eureka had below normal precipitation in August and above normal in September. October was extremely wet at all locations. Several of the storm systems in September, October, and early November brought wind gusts close to 50 or 60 mph at some locations. The first killing frost (<24°F) occurred about October

24th at all locations.

Results

Data from each location are contained in Tables 4- 9 and across locations in Tables 10 and 11. There was considerable lodging at all sites, probably due to a combination of stalk disease (Phomopsis and Phoma), wind, and snow. Eureka was not harvested because of severe lodging. Seed yields at Bison were too variable to report due to a combination of lodging and bird damage, but other data collected at that location are contained in Table 4. Oilseed yields were highest at Harrold, where 51 hybrids averaged 2006 lbs/acre, with 42.2% oil (Table 5). The lowest oilseed yields (1648 lbs/A) were recorded at Onida (Table 6). Confection hybrid yields were slightly higher at Harrold than at Onida, averaging 1689 lbs/acre across the 37 hybrids tested (Table 8). In the tables that follow, hybrids are listed alphabetically by brand.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

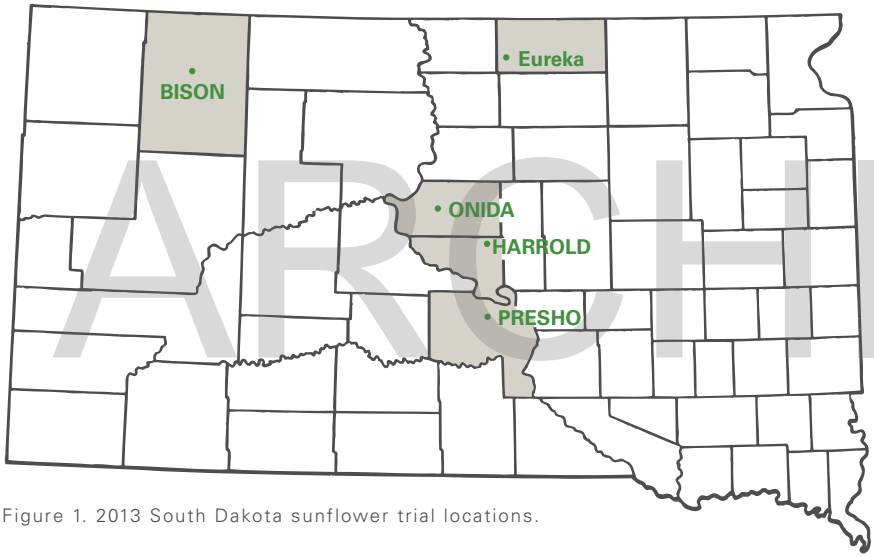

Figure 1. 2013 South Dakota sunflower trial locations.

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type[1]	Location				
			Bison	Eureka	Harrold	Onida	Presho
Advanta Semillas SAIC	MS9024	HS,DM	X	X		X	X
AgVenture Scherr Seed	AVF3H93CL/DM	HO,CL,DM	X	X			
AgVenture Scherr Seed	AVF3H95CL	HO,CL	X	X	X	X	
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	X	X	X	X	
AgVenture Scherr Seed	AVF3N97CL	NS,CL	X	X	X	X	
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	X	X	X	X	X
Winfield Solutions	Croplan 3080	NS	X	X	X	X	X
Winfield Solutions	Croplan 432 E	NS,EX,DM	X	X	X	X	X
Winfield Solutions	Croplan 460 E	NS,EX	X	X	X	X	X
Winfield Solutions	Croplan 548 CL	NS,CL,DM	X	X	X	X	X
Winfield Solutions	Croplan 559 CL	NS,CL,DM	X	X	X	X	X
Sunopta/Dahlgren	4421	ConOil	X	X	X	X	X
Sunopta/Dahlgren	4421CL	CL,ConOil	X	X	X	X	X
Genosys	11G08	NS		X		X	
Genosys	12E06	HO,DM		X		X	
Genosys	12E12	HO,CL,DM		X		X	
Genosys	12E13	HO,CL,DM		X		X	
Genosys	12E14	HO,CL,DM		X		X	
Genosys	12G20	HO,CL		X		X	
Legend Seeds	LSF 318NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9302HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9418HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9426NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9468NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9501	Trad.	X	X	X	X	X
Legend Seeds	LSF 9505NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9534NCL	NS,CL	X	X	X	X	X
Legend Seeds	LSF 9536HOCL	HO,CL	X	X	X	X	X
Legend Seeds	LSF 9801NCL	NS,CL	X	X	X	X	X
Mycogen Seeds	8D310CL	ConOil,CL		X		X	
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X		X	
Mycogen Seeds	8D417	ConOil,SS		X	X	X	
Mycogen Seeds	8N421CLDM	NS,CL,DM	X	X	X	X	X
Mycogen Seeds	8N510	NS			X	X	X
Mycogen Seeds	8N668S	NS,SS			X	X	X
Mycogen Seeds	E82558CP	NS,CP			X	X	X
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	X	X	X	X	X
Proseed	E-21 CL	HO,CL	X	X	X	X	X
Proseed	E-31 CL	HO,CL	X	X	X	X	X
Proseed	E-362436	HO	X	X	X	X	X
Proseed	E-85 CL	HO,CL	X	X	X	X	X
Nuseed/Seeds 2000	Badger	ConOil,CL	X	X	X	X	X
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	X	X	X	X	X

Table 1. Oilseed sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type[1]	Location				
			Bison	Eureka	Harrold	Onida	Presho
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Daytona	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	Durango	NS,EX	X	X	X	X	X
Nuseed/Seeds 2000	Falcon	NS,EX	X	X	X	X	X
Nuseed/Seeds 2000	Hornet	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NHK12M141	HO,CL	X	X	X	X	X
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	X	X	X	X	X
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	X	X	X	X	X
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	X	X	X	X	X
Nuseed/Seeds 2000	Torino	NS,CL,DM	X	X	X	X	X
Syngenta	3733 NS/DM	NS,DM	X	X	X	X	X
Syngenta	3845 HO	HO	X	X	X	X	X
Syngenta	3158 NS/CL/DM	NS,CL,DM	X	X	X	X	X
USDA	RSSW-Exp 227/464					X	
USDA	RSSW-Exp 227/468					X	
USDA	RSSW-Exp 231/464					X	
USDA	RSSW-Exp 237/464					X	
USDA	RSSW-Exp 237/468					X	
USDA	RSSW-Exp 243/464					X	
USDA	RSSW-Exp 243/468					X	
USDA	RSSW-Exp 245/464					X	
USDA	RSSW-Exp 245/468					X	
USDA	894 (check)	Trad.	X	X	X	X	X
USDA	cms HA465/RHA 439	NS		X			
USDA	cms HA465/RHA 468	NS		X			

[1]Type: HO=High Oleic, NS=NuSun, Trad.=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2013.

Company/ Brand	Hybrid	Hybrid Type[1]	Location	
			Harrold	Onida
CHS	10EXP01	CL	X	X
CHS	12EXP01	EX	X	X
CHS	13EXP02	CL	X	X
CHS	13EXP03	EX	X	X
Genosys	12GCF05		X	X
Genosys	12GCF12		X	X
Mycogen Seeds	8C451CP	CL	X	X
Nuseed Global	5009		X	X
Nuseed Global	NHW10403		X	X
Nuseed Global	NHW11904	DM	X	X
Nuseed Global	NHW11915		X	X
Nuseed Global	NHW11921		X	X
Nuseed Global	NHW11928		X	X
Nuseed Global	NHW12706	DM	X	X
Nuseed Global	NHW12709		X	X
Nuseed Global	NHW12717		X	X
Nuseed Global	NHW12725	DM	X	X
Nuseed Global	X3939		X	X
Nuseed Global	X4417		X	X
Nuseed Global	X98578		X	X
Red River Commodities	RRC 2215		X	X
Red River Commodities	RRC 2215 CL	CL	X	X
Red River Commodities	RRC 2217	CP	X	X
Red River Commodities	RRC 8015		X	X
Nuseed/Seeds 2000	Jaguar	CL	X	X
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	X	X
Nuseed/Seeds 2000	Jaguar II	CL	X	X
Nuseed/Seeds 2000	Jaguar XL	CL	X	X
Nuseed/Seeds 2000	NSK12M048	CL,DM	X	X
Nuseed/Seeds 2000	X4334	CL	X	X
Sunopta/Dahlgren	9506CL	CL	X	X
Sunopta/Dahlgren	9521		X	X
Sunopta/Dahlgren	9530CL	CL	X	X
Sunopta/Dahlgren	9579		X	X
Sunopta/Dahlgren	9589CL	CL	X	X
Sunopta/Dahlgren	9592CL+	CL+	X	X
USDA	924 (check)		X	X

[1]Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Table 3. Climate summary for weather stations nearest to 2013 South Dakota hybrid sunflower test sites and departures from normal.

Location-Month	2013 Temperature			Total Precip (in.)	Departure from Normal[1]			
	Avg Max.	Avg Min.	Mean		Max Temp	Min Temp	Avg Temp	Precip %
	----------(°F)----------				----------(°F)----------			
Bison*								
May	66.9	42.1	54.6	6.03	-1.9	-1.2	-1.5	195
June	74.0	51.3	63.1	1.84	-4.0	-1.1	-2.1	63
July	84.4	56.7	70.3	1.04	-2.1	-2.0	-2.3	44
August	83.6	58.0	69.9	2.70	-2.8	1.0	-1.8	167
September	75.7	50.7	62.3	2.82	0.4	4.1	1.3	222
October	48.9	30.5	39.7	3.21	-11.3	-4.4	-7.9	218
Onida 4 NW*								
May	70.4	43.4	56.9	6.26	0.4	-0.7	-0.2	205
June	77.8	54.4	66.1	1.54	-1.9	0.4	-0.7	46
July	85.3	58.8	72.0	4.92	-2.6	-1.0	-1.8	186
August	84.4	60.1	72.2	2.54	-1.5	2.3	0.3	108
September	80.5	53.6	67.1	0.83	4.4	6.4	5.4	46
October	54.1	34.5	44.3	6.64	-6.4	-0.1	-3.3	398
Kennebec								
May	72.9	43.4	58.2	4.27	0.0	-2.5	-1.2	135
June	81.0	54.7	67.9	2.30	-0.9	-1.1	-0.9	69
July	85.9	60.0	72.9	5.03	-3.8	-2.0	-3.0	202
August	85.6	62.4	74.0	4.15	-2.8	2.4	-0.2	215
September	83.9	54.2	69.1	1.35	4.7	4.9	4.8	76
October	59.7	35.2	47.4	4.07	-4.1	-0.8	-2.5	264
Highmore 1 W								
May	70.8	43.5	57.2	4.79	0.6	-0.9	-0.1	174
June	78.8	54.8	66.8	1.94	-0.2	0.5	0.2	64
July	85.8	59.6	72.7	4.02	-1.0	-0.6	-0.8	148
August	85.3	61.2	73.3	3.02	-0.1	2.7	1.3	135
September	82.5	54.4	68.4	1.02	7.0	5.8	6.3	62
October	56.0	35.0	45.5	5.12	-4.8	-1.1	-3.0	366
Eureka								
May	68.5	42.3	55.4	4.94	-0.5	-1.8	-1.2	172
June	76.8	53.9	65.4	1.64	-0.7	0.1	-0.2	45
July	83.1	58.4	70.8	3.39	-1.4	-0.7	-1.0	114
August	83.9	58.5	71.2	0.98	0.6	1.2	0.9	41
September	76.5	52.4	64.4	2.22	4.0	5.7	4.8	131
October	51.2	33.9	42.6	5.25	-6.5	-0.2	-3.3	305

*2013 climate observations are based on data from the High Plains Regional Climate Center, University of Nebraska, Lincoln. Observations are from sites as close to the actual test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2013 observations to 30-yr averages (1981-2010) for each site.

Table 4. 2013 Sunflower - Oilseed - Bison, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield[2]	Oil	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/A)	(%)	(in)	(%)	(lb/bu)	(%)
Advanta Semillas SAIC	MS9024	HS,DM		44.9	56	11.0	28.0	18
AgVenture Scherr Seed	AVF3H93CL/DM	HO,CL,DM		45.4	51	9.4	29.5	0
AgVenture Scherr Seed	AVF3H95CL	HO,CL		45.6	48	9.9	28.0	6
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM		47.0	53	10.6	28.2	16
AgVenture Scherr Seed	AVF3N97CL	NS,CL		47.4	56	13.2	28.7	27
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM		46.7	48	13.4	25.8	22
Winfield Solutions	Croplan 3080	NS		48.2	50	9.7	27.7	7
Winfield Solutions	Croplan 432 E	NS,EX,DM		43.4	50	10.6	29.7	16
Winfield Solutions	Croplan 460 E	NS,EX		48.0	54	10.3	27.3	20
Winfield Solutions	Croplan 548 CL	NS,CL,DM		45.0	55	9.8	27.4	14
Winfield Solutions	Croplan 559 CL	NS,CL,DM		47.7	57	9.8	26.4	15
Sunopta/Dahlgren	4421	ConOil		42.6	54	10.0	25.8	18
Sunopta/Dahlgren	4421CL	CL,ConOil		42.6	53	9.9	25.3	0
Legend Seeds	LSF 318NCL	NS,CL		43.9	47	9.4	28.2	10
Legend Seeds	LSF 9302HOCL	HO,CL		45.3	52	10.1	28.1	12
Legend Seeds	LSF 9418HOCL	HO,CL		45.7	52	10.6	27.7	0
Legend Seeds	LSF 9426NCL	NS,CL		46.3	56	11.8	28.1	17
Legend Seeds	LSF 9468NCL	NS,CL		44.5	48	15.3	23.7	36
Legend Seeds	LSF 9501	Trad.		45.1	52	13.5	28.6	60
Legend Seeds	LSF 9505NCL	NS,CL		47.1	54	11.9	27.3	28
Legend Seeds	LSF 9534NCL	NS,CL		45.7	56	9.8	28.4	11
Legend Seeds	LSF 9536HOCL	HO,CL		45.3	51	13.0	27.3	23
Legend Seeds	LSF 9801NCL	NS,CL		47.0	53	9.1	26.2	36
Mycogen Seeds	8H449CLDM	HO,CL,DM		50.3	51	14.7	29.6	37
Mycogen Seeds	8N358CLDM	NS,CL,DM		47.9	48	9.7	26.2	11
Mycogen Seeds	8N421CLDM	NS,CL,DM		48.4	56	13.5	26.7	14
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM		47.3	52	10.4	27.1	12
Proseed	E-21 CL	HO,CL		43.3	56	13.2	27.9	24
Proseed	E-31 CL	HO,CL		41.9	59	9.4	26.3	13
Proseed	E-362436	HO		45.9	61	9.5	28.1	43
Proseed	E-85 CL	HO,CL		44.7	59	8.8	26.1	11
Nuseed/Seeds 2000	Badger	ConOil,CL		41.9	55	9.6	28.1	24
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM		40.5	51	9.6	26.2	20
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM		39.0	54	9.5	26.3	16
Nuseed/Seeds 2000	Camaro II	NS,CL,DM		46.1	48	11.5	29.0	8
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM		45.4	51	10.1	28.2	19
Nuseed/Seeds 2000	Daytona	HO,CL,DM		45.8	49	9.3	29.3	7
Nuseed/Seeds 2000	Durango	NS,EX		44.8	46	11.2	27.3	45
Nuseed/Seeds 2000	Falcon	NS,EX		46.6	53	13.3	28.7	45
Nuseed/Seeds 2000	Hornet	HO,CL,DM		47.4	50	9.8	27.2	11
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM		44.1	50	9.4	23.5	23
Nuseed/Seeds 2000	NHK12M141	HO,CL		44.3	54	9.2	25.2	8
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM		46.8	50	12.0	26.6	11
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul		41.6	53	10.2	26.5	24
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul		45.2	48	9.8	26.5	31

Table 4. 2013 Sunflower - Oilseed - Bison, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield[2]	Oil	Plant Height	Harv. Moist.	Test Wt.	Lodge
			(lbs/A)	(%)	(in)	(%)	(lb/bu)	(%)
Nuseed/Seeds 2000	Torino	NS,CL,DM		47.2	53	12.8	27.2	28
Syngenta	3733 NS/DM	NS,DM		46.5	48	10.7	27.8	25
Syngenta	3845 HO	HO		47.0	45	9.6	27.1	12
Syngenta	3158 NS/CL/DM	NS,CL,DM		47.1	50	12.8	27.5	28
USDA	894 (check)	Trad.		46.4	49	10.0	27.6	16
Grand mean				45.5	52	10.8	27.3	19
LSD 5%				1.7	4	2.0	2.2	19
C.V.				2.6	6.1	12.9	5.7	69.0

[1]Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Yields are not reported due to excessive variability in the data (30-40% bird damage, lodging).

Planted June 5, 2013. Harvested Nov. 1, 2013. Previous crop=wheat.

Table 5. 2013 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.				
			----(lbs/a)----		(%)	(in)	(%)	(%)
AgVenture Scherr Seed	AVF3H95CL	HO,CL	1821	--	41.4	66	11.0	6
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	2356	--	43.6	65	11.5	8
AgVenture Scherr Seed	AVF3N97CL	NS,CL	2004	--	42.8	65	11.6	8
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2522	--	43.0	62	11.7	6
Winfield Solutions	Croplan 3080	NS	1913	--	45.8	67	9.8	8
Winfield Solutions	Croplan 432 E	NS,EX,DM	2049	2304	40.0	65	10.7	10
Winfield Solutions	Croplan 460 E	NS,EX	1847	2303	44.6	73	10.7	21
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1700	2153	42.8	72	11.0	12
Winfield Solutions	Croplan 559 CL	NS,CL,DM	2130	2304	43.9	75	10.1	8
Sunopta/Dahlgren	4421	ConOil	1884	--	40.1	68	10.9	10
Sunopta/Dahlgren	4421CL	CL,ConOil	2065	--	39.0	72	11.3	9
Legend Seeds	LSF 318NCL	NS,CL	2092	2325	39.8	65	10.8	10
Legend Seeds	LSF 9302HOCL	HO,CL	1607	2206	41.8	64	10.9	8
Legend Seeds	LSF 9418HOCL	HO,CL	2148	--	42.1	60	11.1	6
Legend Seeds	LSF 9426NCL	NS,CL	2340	--	43.9	68	11.7	7
Legend Seeds	LSF 9468NCL	NS,CL	2204	--	44.0	64	11.7	2
Legend Seeds	LSF 9501	Trad.	2590	2713	39.9	76	11.4	13
Legend Seeds	LSF 9505NCL	NS,CL	2226	2329	43.5	69	12.0	4
Legend Seeds	LSF 9534NCL	NS,CL	2477	--	43.2	71	11.4	1
Legend Seeds	LSF 9536HOCL	HO,CL	2066	--	43.9	64	11.3	5
Legend Seeds	LSF 9801NCL	NS,CL	1757	--	43.3	67	10.6	10
Mycogen Seeds	8H449CLDM	HO,CL,DM	2221	2323	46.1	68	11.6	11
Mycogen Seeds	8D417	ConOil,SS	2240	2291	42.4	51	11.2	2
Mycogen Seeds	8N421CLDM	NS,CL,DM	2037	2289	42.0	65	10.5	4
Mycogen Seeds	8N510	NS	2116	2347	43.1	66	10.7	7
Mycogen Seeds	8N668S	NS,SS	2507	--	46.8	45	11.8	4
Mycogen Seeds	E82558CP	NS,CP	2152	--	46.9	45	11.1	5
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1754	1826	42.3	70	11.0	5
Proseed	E-21 CL	HO,CL	2107	2321	38.8	73	10.6	11
Proseed	E-31 CL	HO,CL	1867	--	41.0	73	9.9	11
Proseed	E-362436	HO	1908	--	40.4	76	10.9	25
Proseed	E-85 CL	HO,CL	1748	--	40.8	73	9.9	17
Nuseed/Seeds 2000	Badger	ConOil,CL	1535	2113	39.0	75	9.8	15
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1603	--	36.0	73	9.4	12
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1420	2060	34.8	67	9.7	11
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2305	--	43.8	66	11.7	7
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1677	--	42.6	65	10.4	11
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1929	2449	42.6	65	10.8	5
Nuseed/Seeds 2000	Durango	NS,EX	1680	2103	42.7	61	10.8	6
Nuseed/Seeds 2000	Falcon	NS,EX	2040	2324	42.5	65	10.5	12
Nuseed/Seeds 2000	Hornet	HO,CL,DM	2011	--	43.0	67	11.2	23
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	2009	--	40.7	71	10.5	6
Nuseed/Seeds 2000	NHK12M141	HO,CL	1897	--	42.3	68	10.8	10
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2766	--	43.9	66	11.8	9
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1324	--	37.6	64	11.0	51

Table 5. 2013 Sunflower - Oilseed - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.				
			----(lbs/a)----		(%)	(in)	(%)	(%)
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1766	--	39.6	62	10.3	18
Nuseed/Seeds 2000	Torino	NS,CL,DM	2111	2404	44.1	67	12.0	10
Syngenta	3733 NS/DM	NS,DM	2058	2466	42.1	65	10.0	7
Syngenta	3845 HO	HO	1919	2520	45.6	64	10.0	9
Syngenta	3158 NS/CL/DM	NS,CL,DM	1969	2482	42.4	61	10.7	17
USDA	894 (check)	Trad.	1818	2179	42.8	58	10.5	13
Grand mean			2006	2297	42.2	66	10.9	10
LSD 5%			315	261	1.6	5	0.5	11
C.V.			11.3	11.5	2.7	5.0	3.5	77.8

[1]Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 14, 2013. Harvested Nov. 10, 2013. Previous crop=corn.

Table 6. 2013 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Lodge	Hulling Screen Test[2]
			2013	2-yr Avg.	3-yr Avg.						
			---------(lb/a)---------			(%)		(in)	(%)	(%)	
Advanta Semillas SAIC	MS9024	HS,DM	1084	--	--	39.4	66	68	7.7	51	NT
AgVenture Scherr Seed	AVF3H95CL	HO,CL	1726	--	--	42.0	64	52	8.8	9	NT
AgVenture Scherr Seed	AVF3H94CL/DM	NS,CL,DM	2305	--	--	41.1	62	64	10.0	10	NT
AgVenture Scherr Seed	AVF3N97CL	NS,CL	1816	--	--	41.3	66	57	9.1	10	NT
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	1485	--	--	42.4	65	59	9.1	27	NT
Winfield Solutions	Croplan 3080	NS	1445	--	--	39.6	60	57	8.2	35	NT
Winfield Solutions	Croplan 432 E	NS,EX,DM	1622	1993	--	37.8	59	63	8.7	33	Good
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1334	1643	1731	39.4	61	64	9.1	63	NT
Sunopta/Dahlgren	4421	ConOil	1694	1874	1815	38.6	60	62	8.8	46	NT
Sunopta/Dahlgren	4421CL	CL,ConOil	2120	1932	--	37.7	66	67	9.3	19	NT
Genosys	11G08	NS	1294	1459	--	39.8	64	69	8.2	33	NT
Genosys	12E12	HO,CL,DM	1306	1682	--	38.3	63	69	9.3	38	NT
Genosys	12E13	HO,CL,DM	1739	1839	--	39.0	62	66	8.7	23	NT
Genosys	12E14	HO,CL,DM	2115	2183	--	38.1	63	65	9.0	17	NT
Genosys	12G20	HO,CL	1267	--	--	38.6	61	52	8.5	55	NT
Legend Seeds	LSF 318NCL	NS,CL	1497	1664	--	39.7	61	58	8.5	21	Excel
Legend Seeds	LSF 9302HOCL	HO,CL	1681	2095	--	40.4	63	51	8.8	21	Fail
Legend Seeds	LSF 9418HOCL	HO,CL	1849	--	--	40.1	59	54	8.6	7	Good
Legend Seeds	LSF 9426NCL	NS,CL	2369	--	--	41.4	61	60	9.6	19	Excel
Legend Seeds	LSF 9468NCL	NS,CL	1843	--	--	41.6	65	56	10.2	14	NT
Legend Seeds	LSF 9501	Trad.	1983	2184	--	37.9	64	64	8.8	11	Good
Legend Seeds	LSF 9505NCL	NS,CL	1877	1936	--	42.9	64	65	9.8	25	Fail
Legend Seeds	LSF 9534NCL	NS,CL	1909	--	--	42.1	64	61	8.7	25	Fail
Legend Seeds	LSF 9536HOCL	HO,CL	2108	--	--	42.1	66	58	8.9	19	Fail
Legend Seeds	LSF 9801NCL	NS,CL	1274	--	--	41.7	66	59	8.7	71	Fail
Mycogen Seeds	8D310CL	ConOil,CL	1995	--	--	37.0	64	68	9.0	15	NT
Mycogen Seeds	8N358CLDM	NS,CL,DM	1608	1823	1861	40.5	61	56	8.3	14	NT
Mycogen Seeds	8D417	ConOil,SS	2061	2270	--	41.1	62	49	9.3	9	NT
Mycogen Seeds	8N421CLDM	NS,CL,DM	2004	2111	1940	42.6	63	63	9.2	17	NT
Mycogen Seeds	8N510	NS	1811	2036	2094	40.7	64	59	8.4	11	NT
Mycogen Seeds	E82558CP	NS,CP	1736	--	--	42.5	67	35	9.1	18	NT
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1789	1985	2073	40.2	60	70	9.5	32	Excel
Proseed	E-21 CL	HO,CL	1213	1807	--	40.4	62	67	8.7	35	NT
Proseed	E-31 CL	HO,CL	1454	--	--	40.3	63	67	8.8	40	NT
Proseed	E-362436	HO	1107	--	--	40.6	62	70	8.9	66	NT
Proseed	E-85 CL	HO,CL	1772	--	--	38.2	64	70	8.1	18	NT
Nuseed/Seeds 2000	Badger	ConOil,CL	1124	1681	1709	35.0	63	57	8.3	62	Excel
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1302	--	--	30.6	62	62	8.2	35	Excel
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1215	1647	--	32.5	59	61	8.5	39	Excel
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2209	--	--	42.8	63	70	9.7	22	NT
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1748	--	--	39.4	62	57	8.7	14	NT
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1822	1930	1859	40.4	64	58	9.0	10	NT
Nuseed/Seeds 2000	Falcon	NS,EX	1540	1779	1946	40.9	62	54	8.6	28	NT

Table 6. 2013 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.	Lodge	Hulling Screen Test[2]
			2013	2-yr Avg.	3-yr Avg.						
			---------(lb/a)---------			(%)		(in)	(%)	(%)	
Nuseed/Seeds 2000	Hornet	HO,CL,DM	1654	--	--	40.6	63	56	8.3	30	NT
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1992	--	--	39.6	65	56	8.7	10	NT
Nuseed/Seeds 2000	NHK12M141	HO,CL	1423	--	--	40.8	66	59	8.6	25	NT
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	1801	--	--	40.4	62	53	8.2	19	NT
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1022	--	--	33.0	61	58	8.7	52	Excel
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1092	--	--	35.8	62	57	8.8	58	Excel
Nuseed/Seeds 2000	Torino	NS,CL,DM	1602	1835	1821	42.3	65	59	9.3	33	NT
Syngenta	3733 NS/DM	NS,DM	1158	1778	2052	38.4	62	54	9.0	52	NT
Syngenta	3845 HO	HO	1772	2292	2279	40.2	60	56	8.0	20	NT
Syngenta	3158 NS/CL/DM	NS,CL,DM	2184	2193	2198	41.7	62	55	9.2	15	NT
USDA	RSSW-Exp 227/464		2022	--	--	43.0	62	67	8.9	8	NT
USDA	RSSW-Exp 227/468		1985	--	--	41.7	63	67	8.3	17	NT
USDA	RSSW-Exp 231/464		1944	--	--	43.1	62	63	8.1	12	NT
USDA	RSSW-Exp 237/464		1409	--	--	41.3	62	68	9.0	27	NT
USDA	RSSW-Exp 237/468		1640	--	--	38.1	63	72	7.9	18	NT
USDA	RSSW-Exp 243/464		1155	--	--	39.9	61	58	7.8	48	NT
USDA	RSSW-Exp 243/468		1669	--	--	42.3	61	57	8.0	35	NT
USDA	RSSW-Exp 245/464		1215	--	--	39.1	62	66	8.7	24	NT
USDA	RSSW-Exp 245/468		1213	--	--	38.7	63	62	8.2	19	NT
Grand mean			1648	1910	1952	40.0	63	60	8.7	28	
LSD 5%			490	352	272	2.1	2	8	0.8	20	
C.V.			18.3	16.2	15.7	3.3	1.6	8.1	5.7	45.0	

[1]Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

[2]Hulling screen test: Excel=>65% of seed passes over a 14/64 screen; Good=>75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 15, 2013. Harvested Nov. 14, 2013. Previous crop=wheat.

Table 7. 2013 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.	3-yr Avg.				
			---------(lbs/a)---------			(%)	(in)	(%)	(%)
Advanta Semillas SAIC	MS9024	HS,DM	1706	--	--	39.5	77	8.1	11
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2259	--	--	41.6	67	10.5	4
Winfield Solutions	Croplan 3080	NS	2095	--	--	46.0	67	8.4	7
Winfield Solutions	Croplan 432 E	NS,EX,DM	2288	2103	--	39.9	67	8.7	2
Winfield Solutions	Croplan 460 E	NS,EX	1590	1919	1817	46.6	65	9.8	10
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1760	1947	2061	40.5	71	9.0	15
Winfield Solutions	Croplan 559 CL	NS,CL,DM	2212	2299	2315	45.7	76	8.7	10
Sunopta/Dahlgren	4421	ConOil	1751	--	--	39.6	68	9.1	7
Sunopta/Dahlgren	4421CL	CL,ConOil	1851	--	--	35.8	73	10.0	5
Legend Seeds	LSF 318NCL	NS,CL	1662	1633	--	39.2	62	8.2	7
Legend Seeds	LSF 9302HOCL	HO,CL	1632	1667	--	40.9	65	10.1	7
Legend Seeds	LSF 9418HOCL	HO,CL	2029	--	--	41.9	67	10.0	1
Legend Seeds	LSF 9426NCL	NS,CL	2165	--	--	42.7	71	10.5	6
Legend Seeds	LSF 9468NCL	NS,CL	1991	--	--	42.7	63	10.4	9
Legend Seeds	LSF 9501	Trad.	2077	2126	--	39.7	73	9.3	11
Legend Seeds	LSF 9505NCL	NS,CL	1972	1964	--	42.0	70	10.7	6
Legend Seeds	LSF 9534NCL	NS,CL	2157	--	--	42.3	70	10.1	3
Legend Seeds	LSF 9536HOCL	HO,CL	1944	--	--	41.7	65	10.4	9
Legend Seeds	LSF 9801NCL	NS,CL	1718	--	--	46.0	67	10.3	13
Mycogen Seeds	8H449CLDM	HO,CL,DM	1649	1988	2060	43.1	69	10.1	11
Mycogen Seeds	8N421CLDM	NS,CL,DM	1773	2062	1984	41.1	72	9.0	15
Mycogen Seeds	8N510	NS	1834	2129	2045	41.8	68	9.4	7
Mycogen Seeds	8N668S	NS,SS	1836	--	--	46.5	48	10.6	6
Mycogen Seeds	E82558CP	NS,CP	1667	--	--	44.4	47	10.2	8
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1930	1991	2000	43.8	69	10.4	8
Proseed	E-21 CL	HO,CL	1649	1897	--	38.5	77	10.3	7
Proseed	E-31 CL	HO,CL	1444	--	--	38.9	71	9.5	22
Proseed	E-362436	HO	1919	--	--	41.3	81	10.1	11
Proseed	E-85 CL	HO,CL	1945	--	--	39.9	75	9.3	6
Nuseed/Seeds 2000	Badger	ConOil,CL	1577	1886	1799	36.7	71	8.5	11
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1858	--	--	39.1	72	8.6	14
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1579	1726	--	35.0	70	9.5	9
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2020	--	--	42.5	71	10.5	7
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1550	--	--	41.6	67	9.4	7
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1742	1875	1840	41.3	63	10.0	5
Nuseed/Seeds 2000	Durango	NS,EX	1748	1922	1943	41.8	61	9.6	10
Nuseed/Seeds 2000	Falcon	NS,EX	1793	1840	1845	43.2	63	9.5	5
Nuseed/Seeds 2000	Hornet	HO,CL,DM	2181	--	--	42.1	67	10.3	9
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1966	--	--	41.5	70	9.8	8
Nuseed/Seeds 2000	NHK12M141	HO,CL	1845	--	--	40.9	68	9.8	7
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2206	--	--	42.4	69	10.9	5
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1266	--	--	37.5	66	9.2	30
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1629	--	--	40.5	67	9.0	12
Nuseed/Seeds 2000	Torino	NS,CL,DM	1830	1850	1925	42.7	66	11.0	6
Syngenta	3733 NS/DM	NS,DM	1759	1884	1974	41.7	65	9.0	6

Table 7. 2013 Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Oil	Plant Height	Harv. Moist.	Lodge
			2013	2-yr Avg.	3-yr Avg.				
			---------(lbs/a)---------			(%)	(in)	(%)	(%)
Syngenta	3845 HO	HO	1465	1832	1881	41.4	62	8.3	3
Syngenta	3158 NS/CL/DM	NS,CL,DM	1656	1668	1836	42.6	65	9.3	4
USDA	894 (check)	Trad.	1343	1586	1551	43.5	59	8.7	17
Grand mean			1823	1904	1930	41.5	68	9.6	9
LSD 5%			218	191	167	2.0	4	0.6	8
C.V.			8.6	10	11	3.5	4.0	4.5	64.3

[1]Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 14, 2013. Harvested Nov. 2, 2013. Previous crop=wheat.

Table 8. 2013 Sunflower - Confection - Harrold, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield		Plant Height	Harv. Moist.	Lodge	Seed Over Screen			Nut-meat
			2013	2-yr Avg.				22/64	20/64	18/64	
			----(lbs/a)----		(inch)	(%)	(%)	----------(%)----------			(%)
CHS	10EXP01	CL	1416	1876	69	9.8	14	51	77	88	48.6
CHS	12EXP01	EX	1699	2016	74	10.1	8	74	87	92	51.9
CHS	13EXP02	CL	1560	--	81	10.0	15	45	71	87	52.5
CHS	13EXP03	EX	2498	--	82	11.2	8	69	84	90	51.1
Genosys	12GCF05		1340	--	73	10.7	2	67	84	91	52.8
Genosys	12GCF12		1413	--	83	10.5	40	68	82	87	55.4
Mycogen Seeds	8C451CP	CL	1634	1848	74	9.4	7	62	84	91	56.2
Nuseed Global	5009		1834	1999	72	11.0	9	65	86	93	50.9
Nuseed Global	NHW10403		1361	--	79	10.2	16	73	89	94	48.7
Nuseed Global	NHW11904	DM	1826	1884	73	8.6	15	73	85	92	54.5
Nuseed Global	NHW11915		1771	--	79	11.9	9	46	73	89	51.1
Nuseed Global	NHW11921		1854	1910	82	11.3	5	61	83	92	52.1
Nuseed Global	NHW11928		1878	--	70	10.6	21	63	80	87	50.0
Nuseed Global	NHW12706	DM	2536	--	86	11.7	2	58	80	92	53.6
Nuseed Global	NHW12709		1924	--	85	9.2	0	65	84	89	53.8
Nuseed Global	NHW12717		2055	--	64	11.5	2	57	81	92	53.0
Nuseed Global	NHW12725	DM	2092	--	72	9.3	11	68	84	89	53.0
Nuseed Global	X3939		1961	--	70	10.0	13	49	76	90	51.8
Nuseed Global	X4417		1347	1639	63	8.1	15	75	87	91	56.4
Nuseed Global	X98578		1458	--	73	10.2	4	64	83	93	51.1
Red River Commodities	RRC 2215		2095	2162	70	8.3	11	59	78	88	54.4
Red River Commodities	RRC 2215 CL	CL	1514	1755	75	9.9	17	59	80	87	53.8
Red River Commodities	RRC 2217	CP	1448	--	69	9.4	13	62	82	88	56.2
Red River Commodities	RRC 8015		1641	--	63	10.4	13	72	86	90	52.0
Nuseed/Seeds 2000	Jaguar	CL	1764	1939	65	8.9	16	59	79	91	51.4
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1707	1781	65	9.2	13	53	74	84	49.7
Nuseed/Seeds 2000	Jaguar II	CL	1545	1868	70	9.0	12	58	76	87	52.5
Nuseed/Seeds 2000	Jaguar XL	CL	1373	--	81	9.5	15	58	80	92	54.0
Nuseed/Seeds 2000	NSK12M048	CL,DM	1670	--	74	10.2	13	81	90	94	55.5
Nuseed/Seeds 2000	X4334	CL	1050	1644	74	9.0	40	55	81	91	54.4
Sunopta/Dahlgren	9506CL	CL	1644	--	72	11.5	21	85	91	93	52.5
Sunopta/Dahlgren	9521		1461	--	75	9.6	21	69	85	91	53.3
Sunopta/Dahlgren	9530CL	CL	1497	--	74	9.2	19	50	74	86	55.6
Sunopta/Dahlgren	9579		2114	--	68	11.1	17	82	91	94	55.5
Sunopta/Dahlgren	9589CL	CL	1781	--	80	9.8	11	46	69	84	54.2
Sunopta/Dahlgren	9592CL+	CL+	1574	--	66	10.1	13	69	82	87	54.3
USDA	924 (check)		1175	1275	79	8.2	37	9	25	57	60.8
Grand Mean			1689	1828	74	10.0	14	62	80	89	53.2
LSD 5%			390	256	7	0.8	17	14	10	9	3.8
C.V.			16.5	14.2	6.1	5.9	84.4	11.4	6.2	4.9	3.5

[1]Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Planted June 14, 2013. Harvested Nov. 10, 2013. Previous crop=corn.

Table 9. 2013 Sunflower - Confection - Onida, SD

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield			Days to Flower	Plant Height	Harv. Moist.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat
			2013	2-yr Avg.	3-yr Avg.						22/64	20/64	18/64	
			-------(lbs/a)-------				(inch)	(%)	(%)	(Plt/A)	----------(%)----------			(%)
CHS	10EXP01	CL	1642	1976	1926	64	69	10.9	44	18.0	44	73	87	52.3
CHS	12EXP01	EX	2050	2267	--	67	76	10.9	19	18.0	73	86	92	51.7
CHS	13EXP02	CL	1740	--	--	68	81	11.7	48	18.0	55	78	90	50.1
CHS	13EXP03	EX	1744	--	--	69	80	10.8	28	18.0	47	74	87	54.4
Genosys	12GCF05		1580	1578	--	68	70	11.5	22	15.8	53	78	87	49.2
Genosys	12GCF12		1884	--	--	67	86	10.7	7	16.0	63	79	85	66.6
Mycogen Seeds	8C451CP	CL	1681	1878	--	68	63	10.6	29	18.0	59	79	86	59.5
Nuseed Global	5009		1766	1840	--	66	69	11.1	24	18.0	36	64	85	55.4
Nuseed Global	NHW10403		1263	--	--	66	80	11.7	60	18.0	68	85	93	52.7
Nuseed Global	NHW11904	DM	2087	1925	--	59	69	10.9	16	18.0	64	88	94	53.4
Nuseed Global	NHW11915		1747	--	--	68	76	12.7	24	18.0	52	78	91	54.9
Nuseed Global	NHW11921		1886	1972	--	67	78	11.9	14	18.0	61	81	92	52.3
Nuseed Global	NHW11928		1908	--	--	59	74	11.0	19	16.0	59	82	92	56.0
Nuseed Global	NHW12706	DM	1754	--	--	67	76	12.3	16	18.0	51	78	91	54.7
Nuseed Global	NHW12709		1397	--	--	64	71	10.6	66	18.0	64	84	91	54.0
Nuseed Global	NHW12717		1121	--	--	67	74	12.1	77	18.0	42	73	86	53.8
Nuseed Global	NHW12725	DM	1197	--	--	57	66	9.9	77	18.0	68	87	92	52.9
Nuseed Global	X3939		1334	--	--	63	72	10.9	28	18.0	42	73	87	52.5
Nuseed Global	X4417		1129	1497	--	57	66	9.2	59	18.0	77	89	92	54.6
Nuseed Global	X98578		1008	--	--	68	74	11.3	59	18.0	65	86	93	53.8
Red River Commod.	RRC 2215		2348	2155	2034	63	74	10.7	20	18.0	60	82	90	56.5
Red River Commod.	RRC 2215 CL	CL	1867	2121	2009	68	80	11.4	16	18.0	60	83	91	56.5
Red River Commod.	RRC 2217 CP	CP	1781	--	--	69	65	11.3	24	18.0	69	86	93	55.9
Red River Commod.	RRC 8015		1874	--	--	63	65	10.4	14	18.0	63	84	91	56.1
Nuseed/Seeds 2000	Jaguar	CL	2026	2064	1941	60	67	10.5	47	18.0	50	79	90	53.7
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1768	1786	1671	55	62	9.9	28	18.0	48	80	92	52.8
Nuseed/Seeds 2000	Jaguar II	CL	1630	1763	1679	62	68	10.5	55	18.0	64	80	90	52.1
Nuseed/Seeds 2000	Jaguar XL	CL	1609	--	--	64	77	11.6	50	18.0	50	71	83	49.5
Nuseed/Seeds 2000	NSK12M048	CL,DM	1488	--	--	64	76	11.8	44	15.8	77	87	92	52.8
Nuseed/Seeds 2000	X4334	CL	1365	1665	--	64	72	11.7	62	18.0	60	82	92	53.4
Sunopta/Dahlgren	9506CL	CL	1461	--	--	69	75	11.9	54	18.0	64	83	89	54.2
Sunopta/Dahlgren	9521		2097	--	--	65	69	10.3	25	18.0	52	74	86	56.6
Sunopta/Dahlgren	9530CL	CL	2193	2037	1950	68	76	11.4	23	18.0	32	64	83	57.3
Sunopta/Dahlgren	9579		1519	1840	1689	63	68	10.7	15	18.0	65	82	89	55.8
Sunopta/Dahlgren	9589CL	CL	1335	--	--	64	80	11.6	60	18.0	41	64	79	51.0
Sunopta/Dahlgren	9592CL+	CL+	1726	--	--	69	65	11.0	36	18.0	64	81	89	58.9
USDA	924 (check)		860	1100	1041	63	74	9.6	84	18.0	12	26	58	60.9
Grand Mean			1645	1851	1771	65	73	11.1	38	17.8	56	78	88	54.6
LSD 5%			462	327	254	1	5	0.8	23	1.4	23	16	8	6.1
C.V.			20.0	17.9	17.8	1.3	5.1	5.3	43.8	5.6	20.2	10.2	4.6	5.5

[1]Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Planted June 15, 2013. Harvested Nov. 15, 2013. Previous crop=wheat.

Table 10. 2013 Sunflower – Confection – Averaged over two locations

Company/Brand	Hybrid	Hybrid Type1	Seed Yield	Plant Height	Harv. Moist.	Lodge	Seed Over Screen			Nut-meat
							22/64	20/64	18/64	
			(lbs/A)	(inch)	(%)	(%)	----------(%)----------			(%)
CHS	10EXP01	CL	1528	61	10.3	29	47	75	88	50.4
CHS	12EXP01	EX	1874	66	10.5	13	74	86	92	51.8
CHS	13EXP02	CL	1650	71	10.8	32	50	74	88	51.3
CHS	13EXP03	EX	2121	71	11.1	18	58	79	88	52.8
Genosys	12GCF05		1459	63	11.1	12	60	81	89	51.0
Genosys	12GCF12		1648	74	10.6	23	66	81	86	61.0
Mycogen Seeds	8C451CP	CL	1657	59	10.0	18	61	81	88	57.9
Nuseed Global	5009		1799	62	11.1	16	51	75	89	53.1
Nuseed Global	NHW10403		1312	70	10.9	37	70	87	94	50.7
Nuseed Global	NHW11904	DM	1956	62	9.8	15	68	86	93	54.0
Nuseed Global	NHW11915		1759	67	12.3	16	49	76	90	53.0
Nuseed Global	NHW11921		1870	70	11.6	9	61	82	92	52.2
Nuseed Global	NHW11928		1892	63	10.8	20	61	81	90	53.0
Nuseed Global	NHW12706	DM	2145	70	12.0	9	54	79	92	54.2
Nuseed Global	NHW12709		1660	67	9.9	33	64	84	90	53.9
Nuseed Global	NHW12717		1588	61	11.8	39	49	77	89	53.4
Nuseed Global	NHW12725	DM	1644	60	9.6	44	68	85	90	53.0
Nuseed Global	X3939		1647	63	10.5	20	45	74	88	52.2
Nuseed Global	X4417		1237	57	8.7	37	76	88	91	55.5
Nuseed Global	X98578		1233	65	10.8	31	64	85	93	52.5
Red River Commodities	RRC 2215		2221	64	9.5	15	59	80	89	55.5
Red River Commodities	RRC 2215 CL	CL	1691	68	10.6	16	60	81	89	55.2
Red River Commodities	RRC 2217	CP	1614	58	10.3	19	66	84	90	56.0
Red River Commodities	RRC 8015		1757	56	10.4	13	68	85	91	54.1
Nuseed/Seeds 2000	Jaguar	CL	1895	58	9.7	31	55	79	90	52.5
Nuseed/Seeds 2000	Jaguar DMR	CL,DM	1737	55	9.5	20	51	77	88	51.2
Nuseed/Seeds 2000	Jaguar II	CL	1587	61	9.8	33	61	78	88	52.3
Nuseed/Seeds 2000	Jaguar XL	CL	1491	69	10.5	32	54	76	87	51.7
Nuseed/Seeds 2000	NSK12M048	CL,DM	1579	66	11.0	28	79	89	93	54.2
Nuseed/Seeds 2000	X4334	CL	1207	63	10.4	50	57	82	91	53.9
Sunopta/Dahlgren	9506CL	CL	1552	64	11.7	37	75	87	91	53.4
Sunopta/Dahlgren	9521		1779	63	9.9	23	60	79	89	54.9
Sunopta/Dahlgren	9530CL	CL	1845	65	10.3	21	41	69	84	56.5
Sunopta/Dahlgren	9579		1816	59	10.9	16	73	87	92	55.6
Sunopta/Dahlgren	9589CL	CL	1558	70	10.7	35	44	66	82	52.6
Sunopta/Dahlgren	9592CL+	CL+	1650	57	10.5	24	66	82	88	56.6
USDA	924 (check)		1017	67	8.9	60	11	26	57	60.9
Grand Mean			1667	64	10.5	26	59	79	89	53.9
LSD 5%			ns	6	1.1	ns	13	9	5	4.4
C.V.			19.5	6.9	6.1	60.2	16.0	8.4	4.8	4.6

[1]Type: CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant.

Table 11. 2013 Sunflower – Oilseed – Averaged over three locations

Company/Brand	Hybrid	Hybrid Type[1]	Seed Yield	Oil	Plant Height	Harv. Moist.	Lodge
			(lbs/A)	(%)	(in)	(%)	(%)
Winfield Solutions	Croplan 13-59 CL	NS,CL,DM	2089	42.4	63	10.4	13
Winfield Solutions	Croplan 3080	NS	1818	43.8	64	8.8	17
Winfield Solutions	Croplan 432 E	NS,EX,DM	1987	39.2	65	9.4	15
Winfield Solutions	Croplan 548 CL	NS,CL,DM	1598	40.9	69	9.7	30
Sunopta/Dahlgren	4421	ConOil	1777	39.4	66	9.6	21
Sunopta/Dahlgren	4421CL	CL,ConOil	2012	37.5	71	10.2	11
Legend Seeds	LSF 318NCL	NS,CL	1750	39.6	62	9.2	12
Legend Seeds	LSF 9302HOCL	HO,CL	1640	41.1	60	9.9	12
Legend Seeds	LSF 9418HOCL	HO,CL	2008	41.3	60	9.9	5
Legend Seeds	LSF 9426NCL	NS,CL	2291	42.7	66	10.6	11
Legend Seeds	LSF 9468NCL	NS,CL	2012	42.8	61	10.8	8
Legend Seeds	LSF 9501	Trad.	2217	39.1	71	9.8	12
Legend Seeds	LSF 9505NCL	NS,CL	2025	42.8	68	10.8	12
Legend Seeds	LSF 9534NCL	NS,CL	2181	42.6	67	10.1	10
Legend Seeds	LSF 9536HOCL	HO,CL	2039	42.6	62	10.2	11
Legend Seeds	LSF 9801NCL	NS,CL	1583	43.6	64	9.9	31
Mycogen Seeds	8N421CLDM	NS,CL,DM	1938	41.9	67	9.6	12
Mycogen Seeds	8N510	NS	1920	41.9	64	9.5	8
Mycogen Seeds	E82558CP	NS,CP	1852	44.6	42	10.1	10
DuPont Pioneer	Pioneer Brand 63ME80	NS,EX,DM	1825	42.1	70	10.3	15
Proseed	E-21 CL	HO,CL	1656	39.2	72	9.9	18
Proseed	E-31 CL	HO,CL	1588	40.1	70	9.4	25
Proseed	E-362436	HO	1644	40.8	76	10.0	34
Proseed	E-85 CL	HO,CL	1822	39.6	73	9.1	14
Nuseed/Seeds 2000	Badger	ConOil,CL	1412	36.9	68	8.9	29
Nuseed/Seeds 2000	Badger DMR	ConOil,CL,DM	1588	35.3	69	8.8	20
Nuseed/Seeds 2000	Badger HO	HO,CL,ConOil,DM	1405	34.2	66	9.2	20
Nuseed/Seeds 2000	Camaro II	NS,CL,DM	2178	43.0	69	10.6	12
Nuseed/Seeds 2000	Cobalt II	HO,CL,DM	1658	41.2	63	9.5	11
Nuseed/Seeds 2000	Daytona	HO,CL,DM	1831	41.4	62	9.9	6
Nuseed/Seeds 2000	Falcon	NS,EX	1791	42.2	61	9.5	15
Nuseed/Seeds 2000	Hornet	HO,CL,DM	1949	41.9	63	10.0	21
Nuseed/Seeds 2000	NHK12M140	HO,CL,DM	1989	40.6	66	9.7	8
Nuseed/Seeds 2000	NHK12M141	HO,CL	1722	41.3	65	9.7	14
Nuseed/Seeds 2000	NLK12M008	NS,CL,DM	2257	42.2	62	10.3	11
Nuseed/Seeds 2000	NLK12S069	NS,EX,Dehul	1204	36.0	63	9.6	44
Nuseed/Seeds 2000	NLK12S070	NS,EX,Dehul	1496	38.6	62	9.4	30
Nuseed/Seeds 2000	Torino	NS,CL,DM	1848	43.0	64	10.8	16
Syngenta	3733 NS/DM	NS,DM	1658	40.8	61	9.3	22
Syngenta	3845 HO	HO	1718	42.4	61	8.8	11
Syngenta	3158 NS/CL/DM	NS,CL,DM	1936	42.2	60	9.7	12
Grand mean			1827	40.9	65	9.8	16
LSD 5%			193	1.1	3	0.4	7
C.V.			12.5	3.2	5.6	4.4	53.9

[1]Type: HO=High Oleic, NS=NuSun, Trad=Traditional (linoleic), CL=Clearfield, EX=ExpressSun, DM=Downy Mildew Resistant, SS=Short Stature, HS=High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

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2014 South Dakota Flax Variety Trial Results

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Yield trials of flax varieties and experimental lines from South Dakota, North Dakota, and Canada were grown at Brookings and Pierre, SD in 2014. The purpose of the trials was to provide performance information on released flax varieties to producers and compare performance of experimental lines to established checks in order to identify possible new varieties.

In 2014, eleven experimental lines from the North Dakota State University flax breeding program were tested against 25 released varieties at Brookings, SD. The trial was planted on May 5, 2014 and harvested on September 22nd. The previous crop was wheat. Another trial of 20 released varieties and two experimental lines was seeded no-till at the Dakota Lakes Research Farm near Pierre, SD on April 22, 2014. The previous crop at Pierre was milo. Experiment design at both locations was a randomized complete block with three replications. Plots consisted of seven rows 20 ft. long, with rows spaced seven inches apart. Plant height and lodging were recorded at maturity. Plots were harvested with a Kincaid 8-XP plot combine fitted with a HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Oil content was determined with a Bruker minispec NMR on 35 ml seed samples from each plot.

The 2014 growing season at Brookings was near normal in temperature except for July, which was cooler than normal. Precipitation was near normal in May, above normal in June, and below normal July through September. Temperatures at Pierre were slightly above normal in May and September, but below normal in June, July and August. Rainfall was close to normal in June and August at Pierre, but much below normal in July and September. Stands were good in all plots, and lodging was negligible at Pierre. Yield, oil, lodging, and height data collected in 2014 are contained in Table 1. Two- and three-year means are provided, if available, for varieties tested at Brookings in 2014, 2013, and 2012. Seed yields in 2014 averaged 24.0 bu/acre with 37.3% oil at Pierre and 18.6 bu/acre with 42.3% oil at Brookings over all the varieties tested.

2014 South Dakota Flax Variety Trial Results

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Table 1. South Dakota 2014 flax variety trials, seed yield and oil content.

Variety Information			Agronomic Performance								
			Seed Yield (bu/A)					Oil (%)			
Variety	Origin-Year	Seed Color	---------2014---------			2-yr	3-yr	2014	2014	2-yr	3-yr
			Brkgs	Pierre	2-loc	Brookings		Pierre	----Brookings----		
AC Hanley	CAN-02	Brown	17.8	21.7	19.8	18.0	17.7	36.8	40.8	39.5	37.6
AC Lightning	CAN-01	Brown	18.3	22.9	20.6	17.5	17.2	37.0	41.4	39.8	38.2
Bison	ND-27	Brown	18.5	--	--	--	--	--	41.5	--	--
Carter	ND-05	Yellow	18.3	26.7	22.5	18.4	18.0	38.3	41.5	40.2	38.6
CDC Arras	CAN-00	Brown	17.1	22.9	20.0	17.0	17.3	36.4	41.1	39.7	37.3
CDC Bethune	CAN-00	Brown	17.3	26.1	21.7	17.5	16.6	37.2	41.0	40.0	37.7
CDC Glas	CAN-12	Brown	18.1	--	--	18.6	17.9	--	42.3	40.6	37.9
CDC Neela	CAN-13	Brown	19.2	--	--	--	--	--	41.4	--	--
CDC Sanctuary	CAN-12	Brown	18.7	--	--	17.9	17.7	--	42.7	41.1	38.3
CDC Sorrel	CAN-07	Brown	18.1	24.7	21.4	15.5	18.7	36.7	41.5	39.9	38.4
Gold ND	ND-14	Yellow	17.6	26.7	22.1	17.3	17.8	38.9	42.9	41.1	39.7
Linott	CAN-66	Brown	18.7	23.6	21.1	18.3	17.6	36.7	40.0	38.7	37.4
McGregor	CAN-82	Brown	19.5	25.8	22.6	19.8	18.8	36.6	41.2	40.0	37.4
Neche	ND-88	Brown	17.0	22.0	19.5	16.9	17.6	37.0	41.1	39.9	38.2
Nekoma	ND-02	Brown	19.4	24.8	22.1	18.1	19.0	37.5	42.1	40.6	39.1
Omega	ND-90	Yellow	17.4	22.2	19.8	16.3	17.4	37.3	41.4	39.5	37.7
Pembina	ND-97	Brown	19.5	22.9	21.2	18.2	18.6	37.9	41.9	40.5	38.5
Prairie Blue	CAN-03	Brown	18.9	24.5	21.7	18.5	18.1	37.6	42.7	41.0	38.4
Prairie Grande	CAN-08	Brown	19.4	23.9	21.7	17.0	17.3	37.4	42.1	40.4	38.1
Prairie Sapphire	CAN-12	Brown	19.1	23.6	21.3	19.5	19.2	38.1	44.5	43.0	40.2
Prairie Thunder	CAN-08	Brown	18.5	23.9	21.2	18.9	20.0	35.7	40.7	39.3	38.1
Rahab 94	SD-94	Brown	16.4	--	--	17.3	18.0	--	41.9	40.1	38.3
Shape	CAN-10	Brown	19.4	26.8	23.1	18.3	--	38.9	43.7	42.6	--
Webster	SD-98	Brown	19.4	23.4	21.4	19.1	19.1	37.3	41.7	40.4	38.7
York	ND-02	Brown	20.2	23.3	21.7	19.8	18.8	36.0	42.0	40.4	37.5
Experimentals											
N11 2009	ND-exp.	Yellow	19.8	--	--	20.3	--	--	42.2	40.6	--
N13 ADTS trt13	ND-exp.	Yellow	18.1	20.5	19.3	17.1	--	38.8	45.7	44.2	--
N13 ADTS trt18	ND-exp.	1/2 Yellow	18.0	23.4	20.7	17.3	--	36.1	42.4	40.6	--
2012 ADTS 20-2013	ND-exp	1/2 Yellow	18.2	--	--	--	--	--	44.7	--	--
2012 NTS 17-2013	ND-exp	Yellow	18.5	--	--	--	--	--	40.6	--	--
2012 NTS 8-2013	ND-exp	Brown	18.6	--	--	--	--	--	43.1	--	--
2012 NTS 9-2013	ND-exp	Yellow	19.0	--	--	--	--	--	43.9	--	--
2013 NTS 24	ND-exp	Yellow	19.9	--	--	--	--	--	44.0	--	--
2013 NTS 25	ND-exp	Yellow	18.4	--	--	--	--	--	44.4	--	--
2013 NTS 30	ND-exp	Yellow	19.0	--	--	--	--	--	43.1	--	--
2013 NTS 44	ND-exp	1/2 Yellow	18.8	--	--	--	--	--	44.6	--	--
Average			18.6	24.0	21.2	18.0	18.1	37.3	42.3	40.5	38.2
LSD 5%			NS	2.2	1.5	1.8	1.6	0.8	0.8	0.8	0.9
C.V.			6.8	5.7	6.2	9.0	9.6	1.3	1.2	1.7	2.5

Pierre planted 4/22/2014 (no-till) and harvested 9/3/2014. Previous crop = milo.
Brookings planted 5/5/2014 and harvested 9/22/2014. Previous crop = spring wheat.

Table 2. South Dakota 2014 flax variety trials, plant height and lodging

Variety Information			Agronomic Performance				
			Plant Height (in.)				2014 Brkgs
Variety	Origin-Year	Seed Color	2014	2014	2-yr	3-yr	Lodging[1]
			Pierre	---Brookings---			(1-9)
AC Hanley	CAN-02	Brown	24	29	26	25	1
AC Lightning	CAN-01	Brown	24	28	26	24	1
Bison	ND-27	Brown	--	27	--	--	2
Carter	ND-05	Yellow	24	26	24	23	1
CDC Arras	CAN-00	Brown	24	28	25	25	2
CDC Bethune	CAN-00	Brown	23	28	25	24	2
CDC Glas	CAN-12	Brown	--	28	25	23	2
CDC Neela	CAN-13	Brown	--	27	--	--	2
CDC Sanctuary	CAN-12	Brown	--	28	24	24	2
CDC Sorrel	CAN-07	Brown	26	30	26	25	2
Gold ND	ND-14	Yellow	25	30	27	26	1
Linott	CAN-66	Brown	25	29	26	25	2
McGregor	CAN-82	Brown	24	29	26	25	2
Neche	ND-88	Brown	25	30	27	25	2
Nekoma	ND-02	Brown	24	28	26	24	2
Omega	ND-90	Yellow	24	27	23	22	2
Pembina	ND-97	Brown	24	30	26	25	2
Prairie Blue	CAN-03	Brown	24	27	24	23	1
Prairie Grande	CAN-08	Brown	24	26	23	22	2
Prairie Sapphire	CAN-12	Brown	25	29	26	25	2
Prairie Thunder	CAN-08	Brown	25	30	26	25	1
Rahab 94	SD-94	Brown	--	28	24	22	1
Shape	CAN-10	Brown	24	28	25	--	2
Webster	SD-98	Brown	24	30	26	25	1
York	ND-02	Brown	23	27	24	23	1
Experimentals							
N11 2009	ND-exp.	Yellow	--	29	26	--	1
N13 ADTS trt13	ND-exp.	Yellow	23	26	24	--	1
N13 ADTS trt18	ND-exp.	1/2 Yellow	23	28	26	--	1
2012 ADTS 20-2013	ND-exp	1/2 Yellow	--	28	--	--	2
2012 NTS 17-2013	ND-exp	Yellow	--	27	--	--	1
2012 NTS 8-2013	ND-exp	Brown	--	27	--	--	1
2012 NTS 9-2013	ND-exp	Yellow	--	27	--	--	3
2013 NTS 24	ND-exp	Yellow	--	28	--	--	1
2013 NTS 25	ND-exp	Yellow	--	30	--	--	1
2013 NTS 30	ND-exp	Yellow	--	30	--	--	1
2013 NTS 44	ND-exp	1/2 Yellow	--	26	--	--	2
Average			24	28	25	24	1.5
LSD 5%			2	2	1	1	0.7
C.V.			3.9	3.7	4.4	4.5	28.6

[1] Lodging was rated on a scale from 1 to 9, where 1 = no lodging and 9 = flat on ground.

2015 South Dakota Flax Variety Trial Results

Kathleen Grady | SDSU Extension Oilseeds Specialist, Brookings
Lee Gilbertson | Oilseeds Senior Ag Research Technician, Brookings

Yield trials of flax varieties and experimental lines from South Dakota, North Dakota, and Canada were grown at Brookings and Pierre, SD in 2015. The purpose of the trials was to provide performance information on released flax varieties to producers and compare performance of experimental lines to established checks in order to identify possible new varieties.

In 2015, ten experimental lines from the North Dakota State University flax breeding program were tested against 26 released varieties at Brookings, SD. The trial was planted on April 29, 2015 and harvested on September 10th. The previous crop was soybean. Another trial of 24 released varieties was seeded no-till at the Dakota Lakes Research Farm near Pierre, SD on April 16, 2015 and harvested August 14th. The previous crop at Pierre was teff. Experiment design at both locations was a randomized complete block with three replications. Plots consisted of seven rows 25 ft. long, with rows spaced seven inches apart. Plant height and lodging were recorded at maturity. Plots were harvested with a Kincaid 8-XP plot combine fitted with a HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Oil content was determined with a Bruker minispec NMR on 35 ml seed samples from each plot.

The 2015 growing season at both Brookings and Pierre began with above normal temperatures and below average precipitation in April. Normal (30-yr average) average monthy temperatures at Brookings are 44.0, 56.1, 65.7, 70.4, 68.2, and 59.0°F in April through September, respectively. May and July had near-normal tempertures at Brookings, while June and September were warmer than normal and August was cooler than the 30-yr average. Precipitation at Brookings was above normal in May, July, and August and below normal in April, June, and September. Normal precipitation at Brookings is 2.13, 2.97, 4.30, 3.25, 3.07, and 3.19" in April through September, respectively. Temperatures at Pierre were above normal in April, June, and September, but below normal in May and near normal in July and August. Normal average monthly temperatures for April through September at Pierre are 46.3, 57.3, 67.1, 73.9, 72.9, and 63.1°F, respectively, with 1.74, 2.94, 3.34, 2.61, 2.08, and 2.15" of precipitation. Rainfall was close to normal in August at Pierre, below average in April, July, and September, and above average in May and June. Stands were good in all plots, and lodging was negligible at both locations. Yield, oil, and height data collected in 2015 are contained in Tables 1 and 2. Two-year means are provided, if available. Seed yields in 2015 averaged 19.1 bu/acre with 38.8% oil at Brookings and 18.5 bu/acre with 34.2% oil at Pierre over all the varieties tested.

2015 South Dakota Flax Variety Trial Results

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Table 1. South Dakota 2015 flax variety trials, seed yield and oil content.

Variety Information			Agronomic Performance									
Variety	Origin-Year	Seed Color	Seed Yield (bu/A)					Oil Content (%)				
			---------2015---------			2-year		---------2015---------			2-year	
			Brkgs	Pierre	2-loc	Brkgs	Pierre	Brkgs	Pierre	2-loc	Brkgs	Pierre
AC Hanley	CAN-02	Brown	17.9	19.6	18.7	17.9	20.6	38.6	34.2	36.8	39.9	35.6
AC Lightning	CAN-01	Brown	18.1	18.8	18.4	18.2	20.8	38.9	34.2	36.7	40.2	35.7
Bison	ND-27	Brown	19.1	17.0	18.0	18.8	--	38.5	33.9	36.0	40.0	--
Carter	ND-05	Yellow	20.6	15.5	18.0	19.4	21.0	38.3	34.0	36.5	40.0	36.3
CDC Arras	CAN-00	Brown	17.4	16.4	16.9	17.3	19.6	37.6	33.4	35.5	39.3	35.0
CDC Bethune	CAN-00	Brown	19.7	16.7	18.2	18.5	21.4	38.5	34.7	36.6	39.8	36.1
CDC Glas	CAN-12	Brown	19.7	24.0	21.8	18.9	--	39.6	35.4	37.4	40.9	--
CDC Neela	CAN-13	Brown	19.8	19.1	19.4	19.5	--	38.6	34.2	36.4	39.9	--
CDC Sanctuary	CAN-09	Brown	21.0	16.9	18.9	19.9	--	39.6	32.9	36.3	41.1	--
CDC Sorrel	CAN-07	Brown	18.6	16.5	17.5	18.3	20.6	38.9	32.9	35.9	40.3	34.9
Gold ND	ND-14	Yellow	19.1	17.3	18.1	18.3	21.9	39.2	36.1	37.5	40.9	37.3
Linott	CAN-66	Brown	17.4	18.2	17.7	18.0	20.9	37.1	33.2	35.2	38.6	35.2
McGregor	CAN-82	Brown	19.4	20.4	19.8	19.3	23.1	37.9	34.2	36.0	39.6	35.3
Neche	ND-88	Brown	16.8	--	--	16.9	--	37.9	--	--	39.5	--
Nekoma	ND-02	Brown	21.4	17.3	19.3	20.4	21.0	38.8	34.9	37.0	40.4	36.3
Omega	ND-90	Yellow	17.8	14.5	16.1	17.6	18.3	38.8	33.6	36.1	40.1	35.3
Pembina	ND-97	Brown	16.8	18.0	17.4	18.2	20.5	38.6	34.4	36.5	40.5	36.0
Prairie Blue	CAN-03	Brown	17.5	21.7	19.8	18.2	23.1	38.6	35.6	37.1	40.7	36.8
Prairie Grande	CAN-08	Brown	19.4	19.9	19.6	19.4	21.9	38.8	34.8	36.9	40.5	36.4
Prairie Sapphire	CAN-12	Brown	17.6	19.4	18.5	18.3	21.5	40.3	35.2	37.7	42.5	36.7
Prairie Thunder	CAN-08	Brown	20.3	17.2	18.7	19.4	20.5	37.4	32.8	35.0	39.2	34.1
Rahab 94	SD-94	Brown	15.2	20.7	18.7	16.2	--	38.2	33.8	36.1	40.0	--
Shape	CAN-10	Brown	17.3	20.5	18.8	18.3	23.6	40.3	35.8	38.0	42.0	37.2
TAM F-201	TX-74	Yellow	16.5	--	--	--	--	38.1	--	--	--	--
Webster	SD-98	Brown	21.4	19.0	20.2	20.4	21.1	38.7	34.1	36.4	40.2	35.8
York	ND-02	Brown	18.9	18.7	18.7	19.5	21.0	38.3	33.8	36.1	40.0	35.0
Experimentals												
N13 ADTS trt13	ND-exp.	Yellow	19.2	--	--	18.7	--	41.5	--	--	43.5	--
N13 ADTS trt18	ND-exp.	Yellow	20.0	--	--	19.0	--	39.0	--	--	40.7	--
2012 NTS 8-2013	ND-exp.	Brown	16.7	--	--	17.6	--	38.6	--	--	40.8	--
2012 NTS 9-2013	ND-exp.	Brown	23.2	--	--	21.1	--	40.2	--	--	42.1	--
2012 NTS 17-2013	ND-exp.	Lt. Brwn	21.0	--	--	19.7	--	37.8	--	--	39.2	--
2012 ADTS 20-2013	ND-exp.	Lt. Brwn	21.5	--	--	19.8	--	42.2	--	--	43.5	--
2013 NTS Trt-34	ND-exp.	Lt. Brwn	17.9	--	--	--	--	40.3	--	--	--	--
2013 EXP30 Trt-70	ND-exp.	Brown	18.9	--	--	--	--	36.3	--	--	--	--
2013 EXP30 Trt-58	ND-exp.	Brown	21.0	--	--	--	--	39.1	--	--	--	--
2013 EXP30 Trt-139	ND-exp.	Brown	23.6	--	--	--	--	38.4	--	--	--	--
Average			19.1	18.5	18.6	18.7	21.2	38.8	34.2	36.5	40.5	35.8
LSD 5%			4.0	2.9	2.5	2.3	1.8	0.8	0.9	0.6	0.6	0.6
C.V.			12.8	9.6	11.7	10.7	7.5	1.3	1.5	1.5	1.3	1.4

Pierre planted 4/16/2015 (no-till) and harvested 8/14/2015. Previous crop = teff.
Brookings planted 4/29/2015 and harvested 9/10/2015. Previous crop = soybean.

2015 South Dakota Flax Variety Trial Results

Table 2. South Dakota 2015 flax variety trials, plant height.

Variety Information			Agronomic Performance				
Variety	Origin-Year	Seed Color	Plant Height (in.)				
			------2015------			2-year	
			Brkgs	Pierre	2-loc	Brkgs	Pierre
AC Hanley	CAN-02	Brown	24	28	26	26	26
AC Lightning	CAN-01	Brown	26	28	27	27	26
Bison	ND-27	Brown	24	28	26	25	--
Carter	ND-05	Yellow	23	28	25	24	26
CDC Arras	CAN-00	Brown	24	30	27	26	27
CDC Bethune	CAN-00	Brown	26	28	27	27	26
CDC Glas	CAN-12	Brown	22	30	26	25	--
CDC Neela	CAN-13	Brown	24	27	25	25	--
CDC Sanctuary	CAN-09	Brown	25	28	27	26	--
CDC Sorrel	CAN-07	Brown	25	30	27	27	28
Gold ND	ND-14	Yellow	26	29	28	28	27
Linott	CAN-66	Brown	25	30	28	27	28
McGregor	CAN-82	Brown	24	30	27	26	27
Neche	ND-88	Brown	26	--	--	28	--
Nekoma	ND-02	Brown	26	28	27	27	26
Omega	ND-90	Yellow	24	28	26	25	26
Pembina	ND-97	Brown	24	28	26	27	27
Prairie Blue	CAN-03	Brown	22	28	25	25	26
Prairie Grande	CAN-08	Brown	23	28	26	25	26
Prairie Sapphire	CAN-12	Brown	25	29	27	27	27
Prairie Thunder	CAN-08	Brown	27	30	29	29	28
Rahab 94	SD-94	Brown	22	27	25	25	--
Shape	CAN-10	Brown	24	29	27	26	26
TAM F-201	TX-74	Yellow	23	--	--	--	--
Webster	SD-98	Brown	26	29	28	28	26
York	ND-02	Brown	25	30	27	26	26
Experimentals							
N13 ADTS trt13	ND-exp.	Yellow	23	--	--	24	--
N13 ADTS trt18	ND-exp.	Yellow	24	--	--	26	--
2012 NTS 8-2013	ND-exp.	Brown	24	--	--	26	--
2012 NTS 9-2013	ND-exp.	Brown	22	--	--	25	--
2012 NTS 17-2013	ND-exp.	Lt. Brwn	24	--	--	26	--
2012 ADTS 20-2013	ND-exp.	Lt. Brwn	24	--	--	26	--
2013 NTS Trt-34	ND-exp.	Lt. Brwn	30	--	--	--	--
2013 EXP30 Trt-70	ND-exp.	Brown	24	--	--	--	--
2013 EXP30 Trt-58	ND-exp.	Brown	24	--	--	--	--
2013 EXP30 Trt-139	ND-exp.	Brown	25	--	--	--	--
Average			24	29	27	26	27
LSD 5%			2	2	2	2	1
C.V.			6.2	3.2	5.0	5.1	3.7

2015 South Dakota Sunflower Hybrid Trial Results

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, carefully consider characteristics such as seed yield potential, oil content, oil composition, maturity, stalk strength, and disease resistance. Select hybrids with traits that best suit your needs and production practices.

Yield

Evaluate as much performance information as possible when selecting a hybrid. Consider information from trials close to your production area, but give more weight to relative hybrid performance over many locations and years. Performance averaged over many tests (locations and years) is called "yield stability".

Good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%, LSD 10%) values at the bottom of each data column. The LSD value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions. Use the LSD 5% value for 95% certainty that the differences are real and the LSD 10% value for 90% certainty that the differences are indeed real and not just due to chance.

For example, if the Onida oilseed test (Table 6) could be repeated in 2016 exactly as it was in 2015, we would be 95% confident that a hybrid that yielded 2069 lbs/acre in 2015 would yield higher than a hybrid that yielded 1737 lbs/acre if they were grown again under highly similar conditions, since their yield difference (332 lbs/acre) is greater than the indicated yield LSD 5% value of 306 lbs/acre.

The coefficient of variability (C.V.) listed at the bottom of each data column is a relative measure of the amount of variation recorded for a particular trait expressed as a percentage of the mean for that trait. Generally, trials with low C.V. rates (low variability) are more reliable for making hybrid choices than trials with higher C.V. rates. Trials with C.V. rates not exceeding 15-20% may be considered reliable.

Look at as many trials as possible. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Oil type may also be important. Hybrids are available with 'traditional' (linoleic), high-oleic, and mid-oleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels. Consistency of oleic levels for particular hybrids is an important trait to consider.

Maturity

Full-season hybrids generally yield higher than early hybrids.

Maturity is especially important if planting is delayed. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. Yield, oil content and test weight are often reduced when a hybrid is damaged by frost before it is fully mature. An earlier hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs. To spread risk and workload, consider planting several hybrids with different maturity dates.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. However, seed must be dried to 9.5% or less for storage.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of sunflower disease and insect control is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops.

Most sunflower hybrids in the United States have resistance to Verticillium wilt, races 1 and 2 of downy mildew and to two or more races of rust. Some hybrids may also exhibit tolerance to sclerotinia head rot, Phomopsis, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Hybrid disease ratings may be included with some performance trial results. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

2015 Trial Procedures

Locations and Hybrids
Oilseed hybrid sunflower trials were planted at five locations in South Dakota (Caputa, Eureka, Highmore, Onida, and Presho) in 2015. Entries in the oilseed sunflower trials included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted at Highmore and Onida. Test locations are indicated on the map in Figure 1. Lists of the hybrids tested in 2015 appear in Tables 1 and 2.

Experimental Methods
Plots at all locations except Presho consisted of four rows 30 feet long, with a 30 inch row spacing. Row length at Presho was 25 feet. The plot layout was in a randomized complete block design with four replications at each location.

Seed of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding dates were June 1, 5, 8, 15, and 23, 2015 for Highmore, Onida, Eureka, Presho, and Caputa, respectively. The previous crop at Eureka and Highmore was corn. At all other locations, the previous crop was wheat. Plots were over-seeded and thinned to approximately 18,000 plants/acre. Stands were good at Caputa, Eureka, and Onida. Highmore had very poor stands and herbicide carryover damage in the oilseed trial, so that trial was not harvested. The first replication of the Highmore confection trial had poor stands and that replication was excluded from all analyses. Presho had good stands in most of replications one through three, but a large area of replication four drowned out, so that replication was excluded from analyses. Replication one at Eureka was damaged by machinery after emergence and was similarly excluded from analyses of data at that location.

Flowering was recorded at Onida as the number of days from planting to 50% ray petals extended. Phomopsis ratings were taken at Highmore and Onida in mid-September by Dr. Febina Mathew, oilseeds plant pathologist. Phomopsis stem canker severity was assessed using a 0-4 scale, where 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant. Plant height and lodging notes were taken at all locations immediately before harvest. The center two rows of each 4-row plot at all locations except Caputa were harvested with a Kincaid 8-XP plot combine fitted with a two-row all row crop header and HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Plots at Caputa were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGage. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot.

Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality was measured at Onida on selected hybrids by passing a one-pint seed sample over 14/64 and 13/64 round-hole screens. A one-pint sub-sample of seed from each plot of the Highmore and Onida confection trials was passed over 22/64, 20/64, and 18/64 round-hole screens to determine percent large seed. Nutmeat percent was determined by weighing 20 whole seeds from each plot, dehulling, and weighing the 20 dehulled kernels.

Weather

A summary of weather conditions near the sunflower test sites is presented in Table 3. The closest weather stations to the Presho and Caputa sunflower plots were at Kennebec and Rapid City airport, respectively. The 2015 growing season was generally warmer than the 30-year average in June, September, and October, and cooler than average in August at all locations. Rapid City (Caputa), Kennebec (Presho), and Highmore were all wetter than normal in May through August and drier than the 30-yr average in September and October. Onida had above-average precipitation in May and August, near normal precipitation in June and September, and below normal rainfall in July and October. Eureka was drier than normal throughout the entire growing season (Table 3). The first killing frost (<26°F) occurred on October 16th at Eureka, Highmore, Onida, and Presho, and on October 29th at Caputa.

Results

Data from each location are contained in Tables 4-9 and across locations in Table 10. Lodging was highest at Caputa. There was very little lodging at Eureka. Oilseed seed yields were highest at Eureka, where 54 hybrids averaged 2704 lbs/acre, with 42.4% oil (Table 5). The lowest oilseed yields (667 lbs/acre) were recorded at Caputa (Table 4). Confection hybrid yields were nearly equal at Onida and Highmore, when averaged across the 15 hybrids tested (Tables 8 and 9). In the tables that follow, hybrids are listed alphabetically by brand.

Figure 1. 2015 South Dakota sunflower trial locations.

Table

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2015.

Company/ Brand	Hybrid	Hybrid Traits[1]	Location			
			Caputa	Eureka	Onida	Presho
AgVenture Scherr Seed	3N94DM	NS,CL,DM	X	X	X	X
AgVenture Scherr Seed	4H95DM	HO,CL,DM	X	X	X	X
AgVenture Scherr Seed	AF3H681ES	HO,EX,DM	X	X	X	X
AgVenture Scherr Seed	AF3N692ES	NS,EX,DM	X	X	X	X
Croplan by Winfield	432 E	NS,EX,DM	X	X	X	X
Croplan by Winfield	458 E HO	HO,EX,DM	X	X	X	X
Croplan by Winfield	545 CL	NS,CL,DM	X	X	X	X
Croplan by Winfield	549 CL HO	HO,CL,DM	X	X	X	X
Croplan by Winfield	553 CL HO	HO,CL,DM	X	X	X	X
Croplan by Winfield	EXP 15-050	NS,CL,DM	X	X	X	X
Croplan by Winfield	EXP 15-117	HO,CL,DM	X	X	X	X
Croplan by Winfield	EXP 15-118	HO,CL,DM	X	X	X	X
Croplan by Winfield	EXP 15-129	HO,CL,DM	X	X	X	X
Croplan by Winfield	EXP 15-187	HO,CL,DM	X	X	X	X
DuPont Pioneer	P63HE60	HO,EX,DM		X	X	X
DuPont Pioneer	P64ME01	NS,EX,DM		X	X	X
Genosys	12G04	HO	X	X	X	X
Genosys	12G20	HO,CL	X	X	X	X
Genosys	12G25	HO,CL	X	X	X	X
Genosys	12G28	HO	X	X	X	X
Mycogen Seeds	8D310CL	ConOil,CL	X	X	X	
Mycogen Seeds	8H449CLDM	HO,CL,DM	X	X	X	X
Mycogen Seeds	8H456CL	HO,CL,DM	X	X	X	X
Mycogen Seeds	8H570SCL	SS,CL,HO	X	X	X	X
Mycogen Seeds	8N358CLDM	NS,CL,DM	X	X	X	
Mycogen Seeds	8N668S	NS,SS			X	X
Nuseed Americas Inc	Badger DMR	NS,CL,DM,ConOil	X	X	X	X
Nuseed Americas Inc	Camaro II	NS,CL,DM	X	X	X	X
Nuseed Americas Inc	Cobalt II	HO,CL,DM	X	X	X	X
Nuseed Americas Inc	Daytona	HO,CL	X	X	X	X
Nuseed Americas Inc	Falcon	NS,EX	X	X	X	X
Nuseed Americas Inc	Hornet	HO,CL,DM	X	X	X	X
Nuseed Americas Inc	NHK12M054	HO,CL,DM	X	X	X	X
Nuseed Americas Inc	NHK12M055	HO,CL,DM	X	X	X	X
Nuseed Americas Inc	NHK12M507	NS,CL,DM,ConOil	X	X	X	X
Nuseed Americas Inc	Talon	NS,EX	X	X	X	X
Proseed Inc	E-1402 CL	CL	X	X	X	X
Proseed Inc	E-21 CL	HO,CL	X	X	X	X
Proseed Inc	E-31 CL	HO,CL	X	X	X	X
Proseed Inc	E-31051 CL	CL	X	X	X	X
Proseed Inc	E-362436	HO	X	X	X	X
Proseed Inc	E-53051 CL	CL	X	X	X	X

2015 South Dakota Sunflower Hybrid Trial Results

Company/ Brand	Hybrid	Hybrid Traits[1]	Location			
			Caputa	Eureka	Onida	Presho
Proseed Inc	E-79051 CL	CL	X	X	X	X
Proseed Inc	E-85 CL	HO,CL	X	X	X	X
Sunopta	4415HO/CLP	HO,CL+		X	X	
Sunopta	4421CL	CL		X	X	
Sunopta	EXP-4416HO/CL	HO,CL		X	X	
Syngenta Seeds Inc	3495 NS/CL/DM	NS,CL,DM	X	X	X	X
Syngenta Seeds Inc	3732 NS	NS	X	X	X	X
Syngenta Seeds Inc	3845 HO	HO	X	X	X	X
Syngenta Seeds Inc	SY7717	HO,CL,DM	X	X	X	X
Thunder Seed	11N94	NS,DM,CL	X	X	X	X
Thunder Seed	35H92	HO,DM,CL	X	X	X	X
Thunder Seed	42H94	HO,DM,CL	X	X	X	X
USDA	894 (check)	Trad.	X	X	X	X
USDA	cms HA465/RHA 447	NS			X	

[1]Traits: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2015.

Company/ Brand	Hybrid	Hybrid Traits[1]	Location	
			Highmore	Onida
CHS	15EXP01	EX	X	X
CHS	15EXP04	CL	X	X
CHS	RH1130EX	EX	X	X
CHS	RH609CLP	CL	X	X
CHS	RH841		X	X
Mycogen Seeds	8C451CP	CL+	X	X
Nuseed Global	JAGII	CL	X	X
Nuseed Global	NDK12M147	CL	X	X
Red River Commodities	RRC 2215		X	X
Red River Commodities	RRC 2215 CL	CL	X	X
Red River Commodities	RRC 2217 CP	CL+	X	X
Sunopta	9521		X	X
Sunopta	9524		X	X
Sunopta	9506CL	CL	X	X
USDA	924 (check)		X	X

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resis

Table 3. Weather data from sites closest to 2015 South Dakota sunflower test plot locations and departures from normal.

Location-Month	2015 Temperature			Total	Departure from Normal[1]			
	Avg Max.	Avg Min.	Mean	Precip (in.)	Max Temp	Min Temp	Avg Temp	Precip %
	----------(°F)----------				----------(°F)----------			
Rapid City Regional AP*								
May	62.2	41.6	51.9	6.86	-5.6	-0.5	-3.1	213
June	78.0	56.2	67.1	7.12	0.2	5.0	2.6	281
July	84.4	57.5	71.0	4.01	-2.7	-0.6	-1.6	217
August	84.5	55.2	69.9	3.41	-1.9	-1.4	-1.7	219
September	80.3	49.3	64.8	0.25	4.7	3.3	4.0	19
October	64.4	38.5	51.5	1.31	3.0	4.4	3.8	92
Onida 4 NW*								
May	66.8	42.2	54.5	5.47	-3.2	-1.9	-2.6	179
June	79.9	55.9	67.9	3.31	0.2	1.9	1.1	99
July	87.8	60.5	74.2	1.35	-0.1	0.7	0.4	51
August	84.4	57.6	71.0	2.79	-1.5	-0.2	-0.9	118
September	80.6	52.0	66.3	1.92	4.5	4.8	4.6	107
October	64.4	40.0	52.2	1.35	3.9	5.4	4.6	81
Kennebec*								
May	69.9	44.0	57.0	4.02	-3.0	-1.9	-2.4	127
June	84.9	57.1	71.0	4.40	3.0	1.3	2.2	131
July	90.3	60.5	75.4	4.08	0.6	-1.5	-0.5	164
August	87.8	59.7	73.8	3.14	-0.6	-0.3	-0.5	163
September	84.0	54.6	69.3	1.55	4.8	5.3	5.0	88
October	68.6	40.5	54.6	1.26	4.8	4.5	4.7	82
Highmore 1 W*								
May	67.3	43.4	55.4	5.38	-2.9	-1.0	-2.0	195
June	80.0	56.8	68.4	6.08	1.0	2.5	1.8	201
July	86.0	60.7	73.4	4.20	-0.8	0.5	-0.2	155
August	81.7	57.1	69.4	3.17	-3.7	-1.4	-2.6	142
September	78.6	52.0	65.3	1.20	3.1	3.4	3.2	73
October	64.7	38.3	51.5	0.70	3.9	2.2	3.0	50
Eureka*								
May	68.8	46.8	57.5	0.90	-0.2	2.7	0.9	31
June	77.0	54.2	65.6	2.37	-0.5	0.4	0.0	65
July	83.3	58.2	70.8	2.16	-1.2	-0.9	-1.1	72
August	80.8	56.0	68.4	1.88	-2.5	-1.3	-1.9	79
September	78.1	49.7	63.9	0.87	5.6	3.0	4.3	51
October	61.6	35.9	48.8	0.55	3.9	1.8	2.9	32

*Weather observations are from sites as close to the actual 2015 test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

[1]Departures from normal were determined by comparing 2015 observations to 30-yr averages (1981-2010) for each site.

Table 4. 2015 - Sunflower - Oilseed - Caputa, SD

Brand	Hybrid	Hybrid Traits[1]	Seed Yield	Oil Content	Harv. Moist.	Test Wt.	Lodge
			(lb/a)	%	%	lb/bu	(0-5)[2]
AgVenture Scherr Seed	3N94DM	NS,CL,DM	539	40.9	7.3	30.3	2.6
AgVenture Scherr Seed	4H95DM	HO,CL,DM	953	40.0	7.2	28.5	1.9
AgVenture Scherr Seed	AF3H681ES	HO,EX,DM	780	41.1	8.0	31.8	1.6
AgVenture Scherr Seed	AF3N692ES	NS,EX,DM	800	40.8	7.9	29.1	1.6
Croplan by Winfield	432 E	NS,EX,DM	352	37.7	8.0	28.8	1.9
Croplan by Winfield	458 E HO	HO,EX,DM	740	38.1	7.6	27.4	1.6
Croplan by Winfield	545 CL	NS,CL,DM	872	37.8	6.8	27.9	1.5
Croplan by Winfield	549 CL HO	HO,CL,DM	496	40.2	6.6	27.4	2.4
Croplan by Winfield	553 CL HO	HO,CL,DM	861	38.3	6.8	28.2	1.6
Croplan by Winfield	EXP 15-050	NS,CL,DM	567	41.2	7.1	29.1	1.3
Croplan by Winfield	EXP 15-117	HO,CL,DM	839	38.6	6.1	27.4	1.1
Croplan by Winfield	EXP 15-118	HO,CL,DM	915	38.7	5.9	27.1	1.1
Croplan by Winfield	EXP 15-129	HO,CL,DM	354	38.7	6.0	26.4	1.2
Croplan by Winfield	EXP 15-187	HO,CL,DM	729	41.9	7.2	28.7	0.9
Genosys	12G04	HO	569	43.2	7.9	29.5	2.0
Genosys	12G20	HO,CL	546	41.4	7.9	31.0	1.7
Genosys	12G25	HO,CL	686	43.2	7.5	31.6	1.8
Genosys	12G28	HO	658	39.1	7.7	27.8	1.8
Mycogen Seeds	8D310CL	ConOil,CL	740	37.9	7.2	26.5	1.6
Mycogen Seeds	8H449CLDM	HO,CL,DM	867	41.8	7.5	31.5	0.7
Mycogen Seeds	8H456CL	HO,CL,DM	1119	41.9	6.3	26.0	1.0
Mycogen Seeds	8H570SCL	SS,CL,HO	885	43.1	7.2	32.0	0.0
Mycogen Seeds	8N358CLDM	NS,CL,DM	439	41.5	8.0	32.1	2.1
Nuseed Americas Inc	Badger DMR	NS,CL,DM,ConOil	281	33.7	6.8	28.4	3.4
Nuseed Americas Inc	Camaro II	NS,CL,DM	683	41.6	7.5	30.4	2.1
Nuseed Americas Inc	Cobalt II	HO,CL,DM	579	39.0	6.3	28.4	2.1
Nuseed Americas Inc	Daytona	HO,CL	947	39.9	7.3	29.2	1.2
Nuseed Americas Inc	Falcon	NS,EX	621	40.2	7.4	29.4	1.3
Nuseed Americas Inc	Hornet	HO,CL,DM	871	39.5	7.1	27.5	1.6
Nuseed Americas Inc	NHK12M054	HO,CL,DM	--	38.5	--	32.9	3.0
Nuseed Americas Inc	NHK12M055	HO,CL,DM	212	38.2	6.7	27.5	2.7
Nuseed Americas Inc	NHK12M507	NS,CL,DM,ConOil	588	36.0	6.8	28.0	2.0
Nuseed Americas Inc	Talon	NS,EX	526	36.8	7.1	27.3	1.8
Proseed Inc	E-1402 CL	CL	704	41.8	6.9	27.5	1.5
Proseed Inc	E-21 CL	HO,CL	973	38.6	9.2	29.5	2.0
Proseed Inc	E-31 CL	HO,CL	1009	39.7	6.6	26.0	1.0
Proseed Inc	E-31051 CL	CL	848	38.8	8.4	27.4	1.8
Proseed Inc	E-362436	HO	472	39.6	7.6	29.4	2.8
Proseed Inc	E-53051 CL	CL	639	39.8	7.2	27.8	2.1
Proseed Inc	E-79051 CL	CL	730	40.5	6.9	27.3	1.3
Proseed Inc	E-85 CL	HO,CL	619	38.6	6.4	28.3	1.8
Syngenta Seeds Inc	3495 NS/CL/DM	NS,CL,DM	695	39.9	5.2	26.4	1.2
Syngenta Seeds Inc	3732 NS	NS	733	39.5	7.8	29.9	1.7

2015 South Dakota Sunflower Hybrid Trial Results

Brand	Hybrid	Hybrid Traits[1]	Seed Yield	Oil Content	Harv. Moist.	Test Wt.	Lodge
			(lb/a)	%	%	lb/bu	(0-5)[2]
Syngenta Seeds Inc	3845 HO	HO	429	40.3	5.8	28.9	2.2
Syngenta Seeds Inc	SY7717	HO,CL,DM	592	39.9	7.0	29.6	1.9
Thunder Seed	11N94	NS,DM,CL	287	40.9	7.2	29.7	3.4
Thunder Seed	35H92	HO,DM,CL	472	38.7	6.5	28.5	1.7
Thunder Seed	42H94	HO,DM,CL	768	39.2	7.2	27.4	1.8
USDA	894 (check)	Trad.	432	42.6	7.8	31.0	2.1
Grand Mean			667	39.8	7.1	28.8	1.8
CV %			17.9	2.3	7.3	5.3	25.8
LSD 10%			28	1.1	0.6	1.8	0.3
LSD 5%			40	1.3	0.7	2.1	0.4

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Lodging was rated on a scale of 0 to 5, where 0=all plants standing, 1=10% lodged, 2=20% lodged, 3=60% lodged, 4=80% lodged, 5=100% lodged.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 23, 2015. Harvested Nov. 6, 2015.

Table 5. 2015 - Sunflower - Oilseed - Eureka, SD

Brand	Hybrid	Hybrid Traits[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2015	2-yr Avg.					
			-----(lb/a)-----		(%)	(in)	(%)	lb/bu	(%)
AgVenture Scherr Seed	3N94DM	NS,CL,DM	3047	2607	43.6	68	8.4	36.1	1
AgVenture Scherr Seed	4H95DM	HO,CL,DM	3108	--	42.1	67	8.0	30.2	0
AgVenture Scherr Seed	AF3H681ES	HO,EX,DM	2492	2391	42.3	75	9.6	34.4	0
AgVenture Scherr Seed	AF3N692ES	NS,EX,DM	3183	2827	45.4	76	9.0	35.6	1
Croplan by Winfield	432 E	NS,EX,DM	1795	2145	38.0	70	9.3	32.9	1
Croplan by Winfield	458 E HO	HO,EX,DM	2834	--	42.8	72	8.7	31.3	1
Croplan by Winfield	545 CL	NS,CL,DM	3038	2601	43.1	68	9.1	34.9	1
Croplan by Winfield	549 CL HO	HO,CL,DM	2407	--	41.1	71	9.2	35.9	0
Croplan by Winfield	553 CL HO	HO,CL,DM	3070	--	43.7	70	9.3	33.9	1
Croplan by Winfield	EXP 15-050	NS,CL,DM	2868	--	44.4	77	8.2	33.9	0
Croplan by Winfield	EXP 15-117	HO,CL,DM	2515	--	40.6	72	8.4	30.9	0
Croplan by Winfield	EXP 15-118	HO,CL,DM	2789	--	41.9	74	8.1	32.0	0
Croplan by Winfield	EXP 15-129	HO,CL,DM	2281	--	40.9	72	9.3	34.2	0
Croplan by Winfield	EXP 15-187	HO,CL,DM	2297	--	42.2	72	8.5	34.9	0
DuPont Pioneer	P63HE60	HO,EX,DM	2567	--	43.7	70	8.8	34.2	0
DuPont Pioneer	P64ME01	NS,EX,DM	3439	2930	43.1	74	10.3	34.3	0
Genosys	12G04	HO	2792	--	45.1	72	8.3	33.4	2
Genosys	12G20	HO,CL	2940	2544	42.7	66	8.0	33.0	0
Genosys	12G25	HO,CL	3027	2641	44.4	70	8.3	34.0	1
Genosys	12G28	HO	3042	--	40.7	69	8.3	34.5	0
Mycogen Seeds	8D310CL	ConOil,CL	2611	2301	38.3	74	9.1	31.0	0
Mycogen Seeds	8H449CLDM	HO,CL,DM	3417	2734	46.8	67	8.1	35.6	0
Mycogen Seeds	8H456CL	HO,CL,DM	2836	--	45.3	71	8.4	32.8	0

2015 South Dakota Sunflower Hybrid Trial Results

Brand	Hybrid	Hybrid Traits[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2015	2-yr Avg.					
			-----(lb/a)-----		(%)	(in)	(%)	lb/bu	(%)
Mycogen Seeds	8H570SCL	SS,CL,HO	2477	--	47.2	47	8.2	31.3	0
Mycogen Seeds	8N358CLDM	NS,CL,DM	3089	--	45.7	70	8.4	33.8	0
Nuseed Americas Inc	Badger DMR	NS,CL,DM,ConOil	2228	2173	34.7	72	8.6	32.7	1
Nuseed Americas Inc	Camaro II	NS,CL,DM	2916	2607	44.5	66	8.2	37.1	0
Nuseed Americas Inc	Cobalt II	HO,CL,DM	2471	2191	42.1	70	8.0	35.0	0
Nuseed Americas Inc	Daytona	HO,CL	2692	--	43.5	62	8.9	33.4	1
Nuseed Americas Inc	Falcon	NS,EX	2578	2182	44.3	64	8.3	34.6	0
Nuseed Americas Inc	Hornet	HO,CL,DM	3129	2482	44.5	68	8.6	33.3	0
Nuseed Americas Inc	NHK12M054	HO,CL,DM	2834	--	44.4	67	8.1	36.8	0
Nuseed Americas Inc	NHK12M055	HO,CL,DM	2793	--	43.4	66	8.3	37.6	0
Nuseed Americas Inc	NHK12M507	NS,CL,DM,ConOil	2453	--	41.9	69	8.8	31.1	2
Nuseed Americas Inc	Talon	NS,EX	2280	2069	40.8	67	8.8	30.9	1
Proseed Inc	E-1402 CL	CL	2214	--	39.8	72	8.8	32.6	0
Proseed Inc	E-21 CL	HO,CL	2421	2149	38.6	75	8.9	31.5	0
Proseed Inc	E-31 CL	HO,CL	2396	2252	39.2	72	9.0	32.6	1
Proseed Inc	E-31051 CL	CL	2405	--	40.3	74	8.9	32.8	0
Proseed Inc	E-362436	HO	2219	2317	42.6	80	9.3	29.1	1

2015 South Dakota Sunflower Hybrid Trial Results

Brand	Hybrid	Hybrid Traits[1]	Seed Yield		Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2015	2-yr Avg.					
			-----(lb/a)-----		(%)	(in)	(%)	lb/bu	(%)
Proseed Inc	E-53051 CL	CL	2737	--	42.4	72	8.3	33.6	0
Proseed Inc	E-79051 CL	CL	2584	--	41.4	73	8.1	32.3	0
Proseed Inc	E-85 CL	HO,CL	2631	2315	39.8	75	8.6	31.8	0
Sunopta	4415HO/CLP	HO,CL+	2973	--	41.4	74	8.7	33.8	0
Sunopta	4421CL	CL	2322	2189	37.2	71	9.4	29.2	1
Sunopta	EXP-4416HO/CL	HO,CL	2586	--	37.6	75	9.0	31.9	0
Syngenta Seeds Inc	3495 NS/CL/DM	NS,CL,DM	2928	2592	41.9	72	8.2	37.4	0
Syngenta Seeds Inc	3732 NS	NS	3068	2646	44.4	62	8.9	35.0	0
Syngenta Seeds Inc	3845 HO	HO	2862	--	46.4	63	7.8	37.0	0
Syngenta Seeds Inc	SY7717	HO,CL,DM	2789	--	43.8	66	8.4	36.0	0
Thunder Seed	11N94	NS,DM,CL	2982	--	44.4	68	8.3	36.5	0
Thunder Seed	35H92	HO,DM,CL	2236	--	43.1	66	8.3	34.8	1
Thunder Seed	42H94	HO,DM,CL	3079	--	43.6	71	8.3	32.8	1
USDA	894 (check)	Trad.	2256	1980	42.6	60	8.8	34.1	0
Grand Mean			2704	2411	42.4	70	8.6	33.6	1
CV %			9.5	10.0	3.0	4.9	6.8	5.4	46.9
LSD 10%			349	213	1.7	5	0.8	2.4	ns
LSD 5%			417	254	2.1	6	0.9	2.9	ns

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
Yield is reported at 10% moisture. Oils adjusted for oleic acid content.
Planted June 8, 2015. Harvested Oct. 21, 2015. Previous crop = corn.
Replication 1 excluded.

Table 6. 2015 - Sunflower - Oilseed - Onida, SD

Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.
			2015	2-yr Avg.	3-yr Avg.				
			--------(lb/a)--------			(%)		(in)	(%)
AgVenture Scherr Seed	3N94DM	NS,CL,DM	1956	2401	--	44.1	62	65	7.1
AgVenture Scherr Seed	4H95DM	HO,CL,DM	1900	--	--	43.0	63	60	6.4
AgVenture Scherr Seed	AF3H681ES	HO,EX,DM	2059	2422	--	43.6	63	70	8.0
AgVenture Scherr Seed	AF3N692ES	NS,EX,DM	1816	2360	--	43.2	63	70	7.1
Croplan by Winfield	432 E	NS,EX,DM	1813	2391	2199	41.3	58	68	7.7
Croplan by Winfield	458 E HO	HO,EX,DM	1435	--	--	42.6	61	68	6.5
Croplan by Winfield	545 CL	NS,CL,DM	1943	2373	2373	42.1	64	64	7.9
Croplan by Winfield	549 CL HO	HO,CL,DM	1946	--	--	43.9	60	70	6.6
Croplan by Winfield	553 CL HO	HO,CL,DM	1835	--	--	43.4	64	64	6.3
Croplan by Winfield	EXP 15-050	NS,CL,DM	1564	--	--	43.8	62	71	6.2
Croplan by Winfield	EXP 15-117	HO,CL,DM	1610	--	--	40.4	63	66	6.2
Croplan by Winfield	EXP 15-118	HO,CL,DM	1672	--	--	42.2	61	67	5.3
Croplan by Winfield	EXP 15-129	HO,CL,DM	1954	--	--	42.4	63	71	7.0
Croplan by Winfield	EXP 15-187	HO,CL,DM	1617	--	--	44.7	65	68	6.1
DuPont Pioneer	P63HE60	HO,EX,DM	1844	--	--	44.0	61	66	6.3
DuPont Pioneer	P64ME01	NS,EX,DM	1960	2456	--	41.4	62	68	7.7
Genosys	12G04	HO	1869	--	--	45.3	61	65	5.8
Genosys	12G20	HO,CL	1971	2243	1908	42.4	61	59	6.4
Genosys	12G25	HO,CL	2069	2418	--	45.5	63	63	6.2
Genosys	12G28	HO	1713	--	--	41.6	62	64	6.8
Mycogen Seeds	8D310CL	ConOil,CL	1420	--	--	39.7	62	70	7.0
Mycogen Seeds	8H449CLDM	HO,CL,DM	1898	2330	--	47.0	62	61	6.5
Mycogen Seeds	8H456CL	HO,CL,DM	1727	--	--	45.6	62	61	6.3
Mycogen Seeds	8H570SCL	SS,CL,HO	1691	--	--	46.1	65	41	5.2
Mycogen Seeds	8N358CLDM	NS,CL,DM	1992	--	--	46.2	60	62	6.3
Mycogen Seeds	8N668S	NS,SS	1895	2176	--	45.8	66	42	6.2
Nuseed Americas Inc	Badger DMR	NS,CL,DM, ConOil	1384	1850	1645	37.6	60	65	7.3
Nuseed Americas Inc	Camaro II	NS,CL,DM	2015	2340	2324	44.4	62	66	6.8
Nuseed Americas Inc	Cobalt II	HO,CL,DM	1629	1718	1714	43.2	60	59	6.1
Nuseed Americas Inc	Daytona	HO,CL	1526	--	--	43.1	61	59	6.6
Nuseed Americas Inc	Falcon	NS,EX	2038	2231	1972	43.7	62	61	6.9
Nuseed Americas Inc	Hornet	HO,CL,DM	2025	2299	2077	44.2	62	62	6.9
Nuseed Americas Inc	NHK12M054	HO,CL,DM	1807	--	--	45.0	61	61	7.1
Nuseed Americas Inc	NHK12M055	HO,CL,DM	1783	--	--	43.4	60	58	5.9
Nuseed Americas Inc	NHK12M507	NS,CL,DM, ConOil	1181	--	--	40.2	60	65	6.5
Nuseed Americas Inc	Talon	NS,EX	1585	--	--	41.1	62	62	4.9

2015 South Dakota Sunflower Hybrid Trial Results

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Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Oil Content	Days to Flwr	Plant Height	Harv. Moist.
			2015	2-yr Avg.	3-yr Avg.				
			--------(lb/a)--------			(%)		(in)	(%)
Proseed Inc	E-1402 CL	CL	1624	--	--	41.6	62	68	7.2
Proseed Inc	E-21 CL	HO,CL	1583	1924	1745	39.9	61	70	7.2
Proseed Inc	E-31 CL	HO,CL	1578	2024	1820	40.9	60	68	7.4
Proseed Inc	E-31051 CL	CL	1623	--	--	40.4	61	70	7.7
Proseed Inc	E-362436	HO	1663	2157	1837	43.3	61	71	7.6
Proseed Inc	E-53051 CL	CL	1860	--	--	42.8	62	69	6.9
Proseed Inc	E-79051 CL	CL	1666	--	--	40.3	61	69	6.6
Proseed Inc	E-85 CL	HO,CL	1779	2289	2131	44.1	61	68	6.7
Sunopta	4415HO/CLP	HO,CL+	1637	--	--	42.6	61	65	7.0
Sunopta	4421CL	CL	1468	1776	1759	39.6	61	69	7.0
Sunopta	EXP-4416HO/CL	HO,CL	1576	--	--	39.6	61	69	7.4
Syngenta Seeds Inc	3495 NS/CL/DM	NS,CL,DM	1816	2007	--	42.7	60	64	6.7
Syngenta Seeds Inc	3732 NS	NS	1881	2231	--	41.7	61	63	6.4
Syngenta Seeds Inc	3845 HO	HO	1970	--	--	45.3	62	63	6.5
Syngenta Seeds Inc	SY7717	HO,CL,DM	1985	--	--	44.7	60	63	6.7
Thunder Seed	11N94	NS,DM,CL	1829	--	--	45.1	61	65	6.0
Thunder Seed	35H92	HO,DM,CL	1675	--	--	42.8	60	62	6.6
Thunder Seed	42H94	HO,DM,CL	2035	--	--	43.8	62	65	6.6
USDA	894 (check)	Trad.	1609	1751	--	46.2	60	60	6.9
USDA	cms HA465/RHA 468	NS	1982	2049	--	42.3	62	66	7.1
Grand Mean			1768	2176	1962	43.0	61	64	6.7
CV %			12.4	9.4	3.9	3.2	1.8	3.6	13.1
LSD 10%			256	169	380	1.6	2	3	1.0
LSD 5%			306	202	459	1.9	2	3	1.2

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

[3]Hulling screen test: Excel = ≥ 65% of seed passes over a 14/64 screen; Good = ≥ 75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 5, 2015. Harvested Oct. 17, 2015. Previous crop = wheat.

Table 6. 2015 - Sunflower - Oilseed - Onida,

Brand	Hybrid	Test Wt.	Lodge	Pop. x1000	Phomopsis Rating		Hulling Screen Test[3]
					Onida	Hghmr	
		lb/bu	(%)	(plt/a)	(0-4)[2]		
AgVenture Scherr Seed	3N94DM	35.3	3	18.0	1.8	1.0	Fail
AgVenture Scherr Seed	4H95DM	31.8	2	18.0	2.0	1.3	NT
AgVenture Scherr Seed	AF3H681ES	36.3	1	17.6	1.5	1.8	NT
AgVenture Scherr Seed	AF3N692ES	34.3	4	18.0	1.5	1.0	Good
Croplan by Winfield	432 E	34.5	4	18.0	2.0	1.5	Fail
Croplan by Winfield	458 E HO	31.7	10	18.0	1.8	1.5	Fail
Croplan by Winfield	545 CL	35.6	1	18.0	1.3	1.3	NT
Croplan by Winfield	549 CL HO	35.5	9	18.0	2.0	1.5	NT
Croplan by Winfield	553 CL HO	32.4	4	18.0	2.0	1.3	NT
Croplan by Winfield	EXP 15-050	34.1	2	16.7	1.5	1.3	NT
Croplan by Winfield	EXP 15-117	32.0	2	18.0	2.0	1.0	NT
Croplan by Winfield	EXP 15-118	32.7	3	18.0	1.8	1.5	NT
Croplan by Winfield	EXP 15-129	36.4	4	18.0	2.0	1.5	NT
Croplan by Winfield	EXP 15-187	32.2	1	18.0	1.5	1.3	NT
DuPont Pioneer	P63HE60	34.5	2	18.0	1.5	2.0	NT
DuPont Pioneer	P64ME01	33.6	3	18.0	1.3	1.5	Fail
Genosys	12G04	33.7	4	18.0	1.8	1.3	NT
Genosys	12G20	32.7	9	18.0	2.0	2.0	NT
Genosys	12G25	35.0	8	18.0	1.8	1.5	NT
Genosys	12G28	34.7	8	18.0	2.0	1.0	NT
Mycogen Seeds	8D310CL	32.8	5	17.1	1.5	1.5	NT
Mycogen Seeds	8H449CLDM	35.2	2	18.0	1.8	1.0	NT
Mycogen Seeds	8H456CL	31.8	5	18.0	2.0	1.3	NT
Mycogen Seeds	8H570SCL	31.6	0	18.0	1.0	1.3	NT
Mycogen Seeds	8N358CLDM	33.5	6	18.0	2.0	--	NT
Mycogen Seeds	8N668S	31.7	0	18.0	1.0	1.5	NT
Nuseed Americas Inc	Badger DMR	33.6	10	18.0	2.0	1.5	NT
Nuseed Americas Inc	Camaro II	36.4	6	18.0	1.8	1.5	NT
Nuseed Americas Inc	Cobalt II	33.8	2	18.0	1.5	1.3	NT
Nuseed Americas Inc	Daytona	32.5	1	18.0	1.8	1.5	NT
Nuseed Americas Inc	Falcon	36.2	3	18.0	1.5	1.8	NT
Nuseed Americas Inc	Hornet	33.0	2	18.0	1.5	1.8	NT
Nuseed Americas Inc	NHK12M054	38.0	1	18.0	1.5	1.5	NT
Nuseed Americas Inc	NHK12M055	35.6	4	18.0	1.8	1.3	NT
Nuseed Americas Inc	NHK12M507	30.1	5	18.0	1.5	1.3	NT
Nuseed Americas Inc	Talon	32.9	2	18.0	2.0	1.5	NT

2015 South Dakota Sunflower Hybrid Trial Results

Brand	Hybrid	Test Wt.	Lodge	Pop. x1000	Phomopsis Rating		Hulling Screen Test[3]
					Onida	Hghmr	
		lb/bu	(%)	(plt/a)	(0-4)[2]		
Proseed Inc	E-1402 CL	32.2	6	18.0	2.0	1.8	NT
Proseed Inc	E-21 CL	32.7	2	18.0	1.8	1.3	NT
Proseed Inc	E-31 CL	34.2	3	18.0	1.5	1.5	NT
Proseed Inc	E-31051 CL	34.2	3	18.0	1.0	1.3	NT
Proseed Inc	E-362436	37.2	14	18.0	2.0	1.5	NT
Proseed Inc	E-53051 CL	34.4	7	18.0	1.3	1.0	NT
Proseed Inc	E-79051 CL	31.3	2	18.0	2.0	1.3	NT
Proseed Inc	E-85 CL	31.8	6	18.0	1.8	1.3	NT
Sunopta	4415HO/CLP	31.7	11	18.0	1.8	--	NT
Sunopta	4421CL	31.1	3	18.0	1.8	--	NT
Sunopta	EXP-4416HO/CL	33.1	5	18.0	1.8	--	NT
Syngenta Seeds Inc	3495 NS/CL/DM	36.2	9	18.0	1.5	1.5	NT
Syngenta Seeds Inc	3732 NS	33.4	1	18.0	2.0	1.3	NT
Syngenta Seeds Inc	3845 HO	36.3	3	18.0	2.0	1.5	NT
Syngenta Seeds Inc	SY7717	34.0	3	18.0	2.0	1.3	NT
Thunder Seed	11N94	37.5	5	18.0	1.8	1.0	NT
Thunder Seed	35H92	34.6	1	18.0	1.8	1.5	NT
Thunder Seed	42H94	31.9	3	18.0	2.0	1.3	NT
USDA	894 (check)	34.5	8	18.0	2.0	1.3	NT
USDA	cms HA465/RHA 468	34.4	6	18.0	1.8	--	NT
Grand Mean		33.8	2	18.0	1.7	1.4	
CV %		4.5	38.6	2.5	23.2	35.4	
LSD 10%		1.8	1	ns	0.5	ns	
LSD 5%		2.1	1	ns	0.6	ns	

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

[3]Hulling screen test: Excel = ≥ 65% of seed passes over a 14/64 screen; Good = ≥ 75% of seed passes over a 13/64 screen; NT=not tested.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 5, 2015. Harvested Oct. 17, 2015. Previous crop = wheat.

Table 7. 2015 - Sunflower - Oilseed - Presho, SD

Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2015	2-yr Avg.	3-yr Avg.					
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(%)
Scherr Seed	3N94DM	NS,CL,DM	2300	--	--	40.5	62	11.3	33.5	5
Scherr Seed	4H95DM	HO,CL,DM	2080	--	--	41.3	62	11.6	31.3	7
Scherr Seed	AF3H681ES	HO,EX,DM	2291	--	--	40.9	70	11.1	33.5	0
Scherr Seed	AF3N692ES	NS,EX,DM	2632	--	--	41.1	66	11.1	31.2	3
Croplan by Winfield	432 E	NS,EX,DM	2475	2041	2139	37.1	60	11.5	32.6	4
Croplan by Winfield	458 E HO	HO,EX,DM	2199	--	--	40.2	64	11.3	29.5	3
Croplan by	545 CL	NS,CL,DM	2691	2134	--	40.2	66	11.3	32.6	2
Croplan by	549 CL HO	HO,CL,DM	2207	--	--	40.6	70	11.2	32.7	5
Croplan by Winfield	553 CL HO	HO,CL,DM	2205	--	--	41.2	70	11.1	30.1	8
Croplan by Winfield	EXP 15-050	NS,CL,DM	2283	--	--	40.5	70	11.1	31.0	1
Croplan by Winfield	EXP 15-117	HO,CL,DM	2056	--	--	38.9	66	11.2	28.9	1
Croplan by Winfield	EXP 15-118	HO,CL,DM	2193	--	--	39.3	64	10.6	29.1	0
Croplan by Winfield	EXP 15-129	HO,CL,DM	2127	--	--	38.5	67	11.4	31.6	0
Croplan by Winfield	EXP 15-187	HO,CL,DM	2343	--	--	41.0	68	11.5	30.9	1
DuPont Pioneer	P63HE60	HO,EX,DM	2286	--	--	41.7	70	10.9	32.0	2
DuPont Pioneer	P64ME01	NS,EX,DM	2903	2277	--	38.7	67	11.7	32.5	2
Genosys	12G04	HO	1853	--	--	41.8	62	11.5	30.3	3
Genosys	12G20	HO,CL	1959	1809	--	39.8	51	11.0	31.0	15
Genosys	12G25	HO,CL	1756	1858	--	41.8	58	11.4	31.2	21
Genosys	12G28	HO	2248	--	--	38.0	60	11.2	31.1	2
Mycogen Seeds	8H449CLDM	HO,CL,DM	2432	--	--	41.4	58	11.2	33.3	0
Mycogen	8H456CL	HO,CL,DM	2279	--	--	43.8	62	11.4	29.0	3
Mycogen	8H570SCL	SS,CL,HO	1968	--	--	41.7	39	11.7	29.8	3
Mycogen	8N668S	NS,SS	1827	1732	1768	45.8	38	11.6	34.3	2
Nuseed Americas Inc	Badger DMR	NS,CL,DM, ConOil	2506	1992	1943	33.7	62	10.5	30.4	3
Nuseed Americas Inc	Camaro II	NS,CL,DM	2278	1801	1880	40.6	62	11.2	32.4	9
Nuseed Americas Inc	Cobalt II	HO,CL,DM	2097	1622	1595	40.5	58	11.3	31.0	1
Nuseed Americas Inc	Daytona	HO,CL	2068	--	--	39.6	54	11.1	31.3	3

2015 South Dakota Sunflower Hybrid Trial Results

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Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Oil Content	Plant Height	Harv. Moist.	Test Wt.	Lodge
			2015	2-yr Avg.	3-yr Avg.					
			-------(lb/a)-------			(%)	(in)	(%)	lb/bu	(%)
Nuseed Americas Inc	Falcon	NS,EX	2372	1876	1845	42.0	59	11.4	33.3	1
Nuseed Americas Inc	Hornet	HO,CL,DM	2460	2094	2125	40.6	66	11.4	31.9	5
Nuseed Americas Inc	NHK12M054	HO,CL,DM	2484	--	--	42.4	59	10.9	33.3	1
Nuseed Americas Inc	NHK12M055	HO,CL,DM	2739	--	--	41.1	58	11.4	32.6	3
Nuseed Americas Inc	NHK12M507	NS,CL,DM, ConOil	1845	--	--	36.5	68	11.5	24.8	1
Nuseed Americas Inc	Talon	NS,EX	2087	1788	--	37.6	56	11.7	27.2	10
Proseed Inc	E-1402 CL	CL	2314	--	--	39.4	60	11.0	29.4	11
Proseed Inc	E-21 CL	HO,CL	2085	1684	1668	34.5	68	11.5	32.1	0
Proseed Inc	E-31 CL	HO,CL	2268	1802	1671	39.1	64	10.5	30.5	6
Proseed Inc	E-31051 CL	CL	2177	--	--	38.0	71	10.5	31.4	1
Proseed Inc	E-362436	HO	2383	2057	2006	39.1	71	11.1	33.8	3
Proseed Inc	E-53051 CL	CL	2346	--	--	40.4	67	11.2	30.8	0
Proseed Inc	E-79051 CL	CL	2282	--	--	38.9	66	10.8	29.3	7
Proseed Inc	E-85 CL	HO,CL	2229	1887	1907	39.1	68	10.8	30.4	3
Syngenta Seeds Inc	3495 NS/CL/DM	NS,CL,DM	2228	1884	--	40.2	62	11.1	33.5	0
Syngenta Seeds Inc	3732 NS	NS	2307	2035	--	40.2	58	11.4	32.6	2
Syngenta Seeds Inc	3845 HO	HO	1805	--	--	40.4	54	10.3	31.0	1
Syngenta Seeds Inc	SY7717	HO,CL,DM	2400	--	--	40.4	64	10.7	31.8	0
Thunder Seed	11N94	NS,DM,CL	2065	--	--	42.1	68	10.9	33.2	5
Thunder Seed	35H92	HO,DM,CL	2016	--	--	40.1	60	11.2	32.5	1
Thunder Seed	42H94	HO,DM,CL	2248	--	--	40.9	63	11.3	30.7	12
USDA	894 (check)	Trad.	1788	1595	1494	41.5	42	11.7	29.3	5
Grand Mean			2229	1893	1837	40.1	62	11.2	31.3	4
CV %			14.0	11.6	11.0	3.6	4.9	3.3	4.1	87
LSD 10%			422	197	144	2.0	4	0.5	1.7	4
LSD 5%			505	236	172	2.4	5	0.6	2.1	5

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

Planted June 15, 2015. Harvested Oct. 26, 2015. Previous crop = wheat.

Replication 4 excluded.

Table 8. 2015 Sunflower - Confection - Highmore, SD

Company/ Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000
			2015	2-yr Avg.	3-yr Avg.					
			-------(lbs/a)-------			(inch)	(%)	(lb/bu)	(%)	(plt/a)
CHS	15EXP01	EX	1538	--	--	62	10.8	17.5	1	17.4
CHS	15EXP04	CL	2263	--	--	62	10.0	24.3	2	18.0
CHS	RH1130EX	EX	1901	--	--	68	10.8	20.6	2	18.0
CHS	RH609CLP	CL	2097	--	--	66	10.5	23.9	5	15.0
CHS	RH841		1256	--	--	64	10.9	20.3	0	12.9
Mycogen Seeds	8C451CP	CL+	1725	1760	1703	66	10.5	16.9	4	14.7
Nuseed Global	JAGII	CL	1506	--	--	64	10.6	20.0	1	15.6
Nuseed Global	NDK12M147	CL	1916	--	--	68	10.3	21.7	3	15.9
Red River Commodities	RRC 2215		1860	1827	1928	63	10.3	20.8	2	14.1
Red River Commodities	RRC 2215 CL	CL	1122	1396	1441	60	11.3	18.9	1	7.4
Red River Commodities	RRC 2217 CP	CL+	1303	1598	1531	60	10.9	17.7	4	13.8
Sunopta	9521		1611	1665	1577	64	10.6	18.7	2	15.6
Sunopta	9524		1350	--	--	66	11.1	19.3	5	14.4
Sunopta	9506CL	CL	1924	--	--	66	11.1	23.0	1	13.5
USDA	924 (check)		1196	1227	1200	64	10.3	20.4	2	13.2
Grand Mean			1638	1579	1563	64	10.7	20.3	2	14.6
CV %			14.1	19.9	19.3	6	3.3	12.1	116	27.5
LSD 10%			321	311.001	227.794	ns	0.5	3.4	ns	ns
LSD 5%			386	376	274	ns	0.6	4.1	ns	ns

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

Yield is reported at 10% moisture.
Planted June 1, 2015. Harvested Oct. 25, 2015. Previous crop = corn.

Replication 1 excluded.

Table 8. 2015 Sunflower - Confection - Highmore, SD

Company/ Brand	Hybrid	Hybrid Traits[1]	Seed Over Screen			Nut-meat	Phom-opsis Rating
			22/64	20/64	18/64		
			---------(%)---------			(%)	(0-4)[2]
CHS	15EXP01	EX	80	83	86	41	1.0
CHS	15EXP04	CL	27	65	85	47	1.3
CHS	RH1130EX	EX	81	82	88	44	1.3
CHS	RH609CLP	CL	55	76	88	46	1.8
CHS	RH841		82	83	90	45	1.8
Mycogen Seeds	8C451CP	CL+	81	82	89	49	1.3
Nuseed Global	JAGII	CL	86	86	93	48	2.0
Nuseed Global	NDK12M147	CL	50	54	75	50	2.0
Red River Commodities	RRC 2215		85	86	93	46	2.0
Red River Commodities	RRC 2215 CL	CL	77	81	87	49	1.5
Red River Commodities	RRC 2217 CP	CL+	83	85	90	48	1.3
Sunopta	9521		87	88	93	46	2.0
Sunopta	9524		88	89	92	42	2.0
Sunopta	9506CL	CL	86	88	92	47	1.0
USDA	924 (check)		9	23	59	57	2.5
Grand Mean			70	77	87	47	1.6
CV %			11.8	11.6	10.6	4.3	23.0
LSD 10%			15	16	ns	4	0.4
LSD 5%			18	19	ns	4	0.5

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

Yield is reported at 10% moisture.
Planted June 1, 2015. Harvested Oct. 25, 2015. Previous crop = corn.

Replication 1 excluded.

Table 9. 2015 Sunflower - Confection - Onida, SD

Company/ Brand	Hybrid	Hybrid Traits[1]	Seed Yield			Days to Flower	Plant Height	Harv. Moist.	Test Wt.
			2015	2-yr Avg.	3-yr Avg.				
			-------(lbs/a)-------				(in)	(%)	(lb/bu)
CHS	15EXP01	EX	1073	--	--	65	65	6.1	21.7
CHS	15EXP04	CL	1758	--	--	64	67	6.0	21.0
CHS	RH1130EX	EX	1627	--	--	66	68	6.5	21.8
CHS	RH609CLP	CL	1694	--	--	62	73	5.8	23.6
CHS	RH841		1912	--	--	63	67	6.1	23.0
Mycogen Seeds	8C451CP	CL+	1545	1935	1855	66	65	6.6	22.4
Nuseed Global	JAGII	CL	1377	--	--	60	67	5.3	21.4
Nuseed Global	NDK12M147	CL	1467	--	--	61	67	5.6	20.9
Red River Commodities	RRC 2215		1758	2196	2252	63	67	5.7	24.1
Red River Commodities	RRC 2215 CL	CL	1474	2117	2039	66	65	6.7	23.6
Red River Commodities	RRC 2217 CP	CL+	1597	1939	1891	66	63	6.0	21.5
Sunopta	9521		1906	2320	2245	63	70	5.9	20.3
Sunopta	9524		1917	--	--	62	68	6.4	23.8
Sunopta	9506CL	CL	1537	--	--	67	68	8.4	22.4
USDA	924 (check)		1556	1361	1199	60	71	4.8	23.9
Grand Mean			1613	1978	1913	63	67	6.1	22.4
CV %			16.7	14.6	17.2	1.2	4.0	9.6	8.3
LSD 10%			321	244	226	1	3	0.7	2.2
LSD 5%			385	294	271	2	4	0.8	ns

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

Yield is reported at 10% moisture.

Planted June 5, 2015. Harvested Oct. 17, 2015. Previous crop = wheat.

Table 9. 2015 Sunflower - Confection - Onida,

Company/ Brand	Hybrid	Hybrid Traits[1]	Lodge	Pop. x1000	Seed Over Screen			Nut-meat	Phom-opsis Rating
					22/64	20/64	18/64		
			(%)	(plt/a)	---------(%)---------			(%)	(0-4)[2]
CHS	15EXP01	EX	0	18.0	43	64	75	46	1.3
CHS	15EXP04	CL	2	18.0	20	41	69	50	1.3
CHS	RH1130EX	EX	3	18.0	55	75	84	41	1.3
CHS	RH609CLP	CL	4	18.0	31	51	64	47	1.8
CHS	RH841		3	18.0	54	75	78	43	1.8
Mycogen Seeds	8C451CP	CL+	3	16.9	29	53	66	45	1.3
Nuseed Global	JAGII	CL	1	18.0	51	76	86	48	2.0
Nuseed Global	NDK12M147	CL	4	18.0	36	57	74	51	1.8
Red River Commodities	RRC 2215		5	18.0	62	69	76	46	1.5
Red River Commodities	RRC 2215 CL	CL	4	18.0	49	60	79	45	1.0
Red River Commodities	RRC 2217 CP	CL+	2	18.0	46	58	69	49	1.3
Sunopta	9521		3	18.0	65	80	86	46	1.8
Sunopta	9524		2	18.0	76	84	87	41	2.0
Sunopta	9506CL	CL	1	17.6	65	77	83	45	1.0
USDA	924 (check)		6	18.0	8	23	62	56	1.8
Grand Mean			3	17.9	46	63	76	47	1.5
CV %			89.5	3.5	36.9	20.0	9.2	5.1	29.6
LSD 10%			3	ns	30	22	12	4	0.5
LSD 5%			ns	ns	ns	27	15	5	0.6

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

Yield is reported at 10% moisture.

Planted June 5, 2015. Harvested Oct. 17, 2015. Previous crop = wheat.

Table 10. 2015 - Sunflower - Confection - Averaged over two SD locations

Company/ Brand	Hybrid	Hybrid Traits[1]	Seed Yield	Plant Height	Harv. Moist.	Test Wt.	Lodge	Pop. x1000	Seed Over Screen			Nut-meat	Phom-opsis Rating
									22/64	20/64	18/64		
			(lb/a)	(inch)	(%)	lb/bu	(%)	(plt/a)	---------(%)---------			(%)	(0-4)[2]
CHS	15EXP01	EX	1272	64	8.1	19.6	0	17.8	61	74	80	43	1.1
CHS	15EXP04	CL	1975	65	7.7	22.4	2	18.0	23	53	77	49	1.3
CHS	RH1130EX	EX	1744	68	8.3	21.2	2	18.0	68	78	86	43	1.3
CHS	RH609CLP	CL	1867	70	7.8	23.7	5	16.7	43	63	76	47	1.8
CHS	RH841		1630	66	8.2	21.8	2	15.8	68	79	84	44	1.8
Mycogen Seeds	8C451CP	CL+	1622	65	8.3	20.0	3	16.0	55	68	77	47	1.3
Nuseed Global	JAGII	CL	1432	66	7.6	20.8	1	17.0	69	81	89	48	2.0
Nuseed Global	NDK12M147	CL	1659	67	7.6	21.3	3	17.1	43	55	74	51	1.9
Red River Commodities	RRC 2215		1801	65	7.7	22.4	4	16.3	73	77	85	46	1.8
Red River Commodities	RRC 2215 CL	CL	1340	63	8.2	21.9	3	13.5	58	67	82	47	1.3
Red River Commodities	RRC 2217 CP	CL+	1471	62	8.1	19.9	3	16.2	65	71	79	48	1.3
Sunopta	9521		1752	67	8.2	19.5	3	17.0	76	84	89	46	1.9
Sunopta	9524		1627	67	8.7	21.5	3	16.5	82	87	89	42	2.0
Sunopta	9506CL	CL	1703	67	9.5	22.6	1	15.8	75	82	88	46	1.0
USDA	924 (check)		1402	68	7.1	22.4	5	16.0	9	23	60	56	2.1
Grand Mean			1620	66	8	21	3	17	58	70	81	47	2
CV %			15.7	4.4	6.2	9.9	99.5	15.7	23.2	15.6	10.0	4.7	26.2
LSD 10%			227	3	0.4	1.9	2	ns	16	13	10	3	0.3
LSD 5%			271	3	0.5	2.3	3	ns	20	16	12	3	0.4

[1]Traits: CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature.

[2]Phomopsis rating scale: 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.
Yield is reported at 10% moisture.

2016 South Dakota Sunflower Hybrid Trial Results

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, consider characteristics such as yield potential, oil content, and disease resistance.

Yield

For yield, consider information from performance trials close to your production area. Performance averaged over many tests (locations and years) is called "yield stability". A good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations.

To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition
Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil.

Another factor to consider is the oil type. Hybrids are available with 'traditional' (linoleic), high-oleic, and midoleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels.

Maturity
Maturity is especially important if planting is delayed. Yield, and oil content are often reduced when a hybrid is damaged by frost before it is fully mature. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. An early hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs.

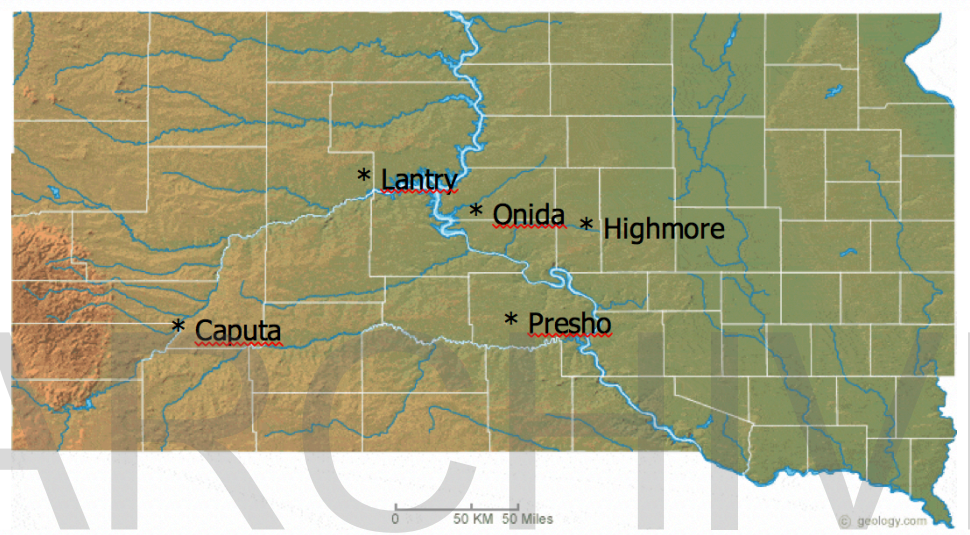
Moisture Content
Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. For storage, seed must be dried to 9.5% or less.

Disease, Insect, and Herbicide Resistance
The most economical and effective means of managing sunflower diseases and other pests is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops. Most commercial sunflower hybrids in the United States have resistance to downy mildew and rust. Some hybrids may also exhibit tolerance to Phomopsis stem canker, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors
Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

Locations and Hybrids

In 2016, oilseed hybrid sunflower trials were planted at five locations in South Dakota (Caputa, Lantry, Highmore, Onida, and Presho). Entries in the oilseed sunflower trials for the five locations included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted only at Highmore and Onida. Test locations are indicated on the map in Figure 1. Lists of the hybrids tested in 2016 appear in Table 1.



Experimental Methods

Plots at all locations except Presho and Caputa consisted of four rows 20 feet long, with a 30 inch row spacing. Row length at Presho and Caputa was 30 feet. The plot layout was in a randomized complete block design with four replications at each location.

Seed of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till. Seeding dates were June 15, 2016 for Presho and Highmore, June 16, 2016 for Highmore and Lantry, and June 23, 2016 for Caputa. The previous crop at all locations was corn. Plots were seeded to approximately 18,000 plants/acre. Stands were good at all locations for both oilseed and confection trials.

Lodging notes and days to flowering was taken at all locations before harvest. Phomopsis ratings were taken at Highmore in mid-October since the disease was observed as the sunflower was getting ready for harvest. Phomopsis stem canker severity was assessed using a 0-4 scale, where 0 = no infection, 1 = stem lesion < 2 inches, 2 = stem lesion > 2 inches, 3 = girdling stem lesion, and 4 = lodged plant.

The center two rows of each 4-row plot at all locations except Caputa were harvested with a Kincaid 8-XP plot combine fitted with a two-row all row crop header and HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Plots at Caputa were harvested with a Wintersteiger Delta plot combine fitted with a HarvestMaster GrainGage. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot. Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content. Hulling quality, and plant height were not taken at all locations at this time.

Weather

In general, the 2016 growing season was generally warmer at all locations. The locations also experienced average to below average precipitation throughout the entire growing season. The first killing frost (<26°F) occurred between late October and early November at all locations.

Results

Oilseed seed yields were highest at Presho, where 28 hybrids averaged 3179 lbs/acre (Table 3). The variety trial data for other locations are not published because Trials with C.V. rates not exceeding 20% may be considered reliable.

Lodging was not observed in any locations (except Highmore because of Phomopsis stem canker).

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

List of Tables

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2016.

Company/Brand	Hybrid	Hybrid Traits[1]	Location				
			Caputa	Lantry	Highmore	Onida	Presho
AgVenture Pinnacle	AF3N692ES	NS, EX, DM		x	x	x	x
AgVenture Pinnacle	AF3H681ES	HO, EX, DM		x	x	x	x
AgVenture Pinnacle	AF3N94CD	NS, CL, DM		x	x	x	x
AgVenture Pinnacle	AF4H95CD	HO, CL, DM		x	x	x	x
AgVenture Pinnacle	AF3N680ES	NS, EX, DM		x	x	x	x
AgVenture Pinnacle	XF2H14CD	NS, CL, DM		x	x	x	x
DuPont Pioneer	P64ME01	NS, EX, DM		x	x	x	x
DuPont Pioneer	P63HE90	NS, EX, DM		x	x	x	x
Land O Lakes	545 CL	NS, CL, DM	x	x		x	x
Land O Lakes	549 CL HO	HO, CL, DM	x	x		x	x
Land O Lakes	553 Cl HO	HO, CL, DM	x	x		x	x
Land O Lakes	432 E	NS, EX, DM	x	x		x	x
Land O Lakes	455 E HO	HO, EX, DM	x	x		x	x
Land O Lakes	458 E HO	HO, EX, DM	x	x		x	x
Land O Lakes	EXP 15-117	HO, CL, DM		x		x	
Land O Lakes	EXP 15-118	HO, CL, DM		x		x	
Land O Lakes	EXP 15-187	HO, CL, DM		x		x	
Land O Lakes	EXP 16-211	HO, CL, DM	x	x		x	
Land O Lakes	EXP 16-001	HO, CL, DM		x	x	x	
Land O Lakes	EXP 16-002	HO, CL, DM		x	x	x	
Land O Lakes	EXP 16-003	HO, CL, DM		x	x	x	
Land O Lakes	EXP 16-288	HO, CL, DM		x	x	x	
Land O Lakes	EXP 16-290	HO, CL, DM		x	x	x	
Mycogen	MY8H456CL	HO, CL, DM	x	x	x	x	x
Mycogen	8H449CLDM	HO, CL, DM	x	x	x	x	x
Mycogen	8N270CLDM	NS, CL, DM		x	x	x	
Mycogen	8D310CL	NS, ConOil		x	x	x	
Nuseed	Talon	NS, EX	x	x	x	x	x
Nuseed	Cobalt II	HO, CL, DM	x	x			
Nuseed	Camaro II	NS, CL, DM	x	x	x	x	x

[1]Traits: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 1 (continued) Oilseed sunflower hybrids and locations where tested in South Dakota - 2016.

Company/Brand	Hybrid	Hybrid Traits[1]	Location				
			Caputa	Lantry	Highmore	Onida	Presho
Nuseed	Hornet	HO, CL, DM	x	x	x	x	x
Nuseed	N4HM354	HO, CL, DM	x	x	x	x	x
Nuseed	Falcon	NS, EX	x	x	x	x	x
Nuseed	Badger DMR	Conoil, DM	x	x	x	x	x
Nuseed	N5LM307	Conoil, DM	x	x	x	x	x
Nuseed	Sierra	HO, CL	x		x	x	x
SunOpta	4421CL	CL		x		x	
SunOpta	4425Cl	CL		x		x	
SunOpta	EX21	EX		x		x	
SunOpta	EX25	EX		x		x	
SunOpta	4415HO.CLR	HO, CL, R		x		x	
Syngenta	SY7717	HO, CL, DM	x	x	x	x	x
Syngenta	SY7919	HO, CL, DM	x	x	x	x	x
Syngenta	3732 NS	NS, Trad	x	x	x	x	x
USDA	894		x	x	x	x	x

[1]Traits: HO = High Oleic, NS = NuSun, Trad. = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Weather data from sites closest to 2016 South Dakota sunflower test plot locations and departures from normal.

Location-Month	2016 Temperature			Total Precip (in.)
	Avg Max.	Avg Min.	Mean	
	----------(°F)----------			
Presho				
May	72	44	58	0.56
June	86	58	72	0.88
July	90	62	76	1.88
August	86	59	73	0.55
September	78	51	64	0.88
October	67	41	54	0.46

*Weather observations are from sites as close to the actual 2016 test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

Table 3. 2016 - Sunflower - Oilseed - Presho, SD

Company/Brand	Hybrid	Hybrid Traits[1]	Oil Content (%)	Harv. Moist. (%)	Yield (lb/A)
Mycogen	MY8H456CL	HO, CL, DM	44.7	5.9	3350
Mycogen	8H449CLDM	HO, CL, DM	45.5	6.5	3542
Land O Lakes	545 CL	NS, CL, DM	41.5	6.1	3547
Land O Lakes	549 CL HO	HO, CL, DM	41.7	6.7	3640
Land O Lakes	553 CL HO	HO, CL, DM	42.1	6.5	3448
Land O Lakes	432 E	NS, EX, DM	42.9	6.7	3189
Land O Lakes	455 E HO	HO, EX, DM	41.6	6.3	3362
Land O Lakes	458 E HO	HO, EX, DM	42.2	6.4	3006
DuPont Pioneer	P64ME01	NS, EX, DM	38.5	7.1	3278
DuPont Pioneer	P63HE90	NS, EX, DM	41.9	7.1	3626
AgVenture Pinnacle	AF3N692ES	NS, EX, DM	43.1	6.5	3885
AgVenture Pinnacle	AF3H681ES	HO, EX, DM	41.2	7.2	3523
AgVenture Pinnacle	AF3N94CD	NS, CL, DM	43.2	6.7	3275
AgVenture Pinnacle	AF4H95CD	HO, CL, DM	43.6	6.3	3964
AgVenture Pinnacle	AF3N680ES	NS, EX, DM	42.6	6.1	3026
AgVenture Pinnacle	XF2H14CD	NS, CL, DM	42.4	6.3	2577
Nuseed	Talon	NS, EX	42.1	6.3	2872
Nuseed	Camaro II	HO, CL, DM	42.9	6.8	2934
Nuseed	Hornet	NS, CL, DM	41	6.3	3170
Nuseed	N4HM354	HO, CL, DM	44.3	5.9	2961
Nuseed	Falcon	NS, EX	44.5	6.6	3045
Nuseed	Badger DMR	Conoil, DM	40.3	6.6	3095
Nuseed	N5LM307	Conoil, DM	40.4	6.6	2637
Nuseed	Sierra	HO, CL	42	6.3	3002
Syngenta	SY7717	HO, CL, DM	43.8	5.8	2769
Syngenta	SY7919	HO, CL, DM	42.4	6.1	3400
Syngenta	3732 NS	NS, Trad	43.5	6.2	2771
USDA	894		43.3	6.2	2128
CV			**4.036506**	**6.315041**	**17.0897**
LSD @ .10			**2.016519**	**0.4774273**	**638.9804**
LSD @ .05			**2.411061**	**0.5708384**	**764.0002**
HSD			**4.8**	**1.1**	**1477.2**
P-Value			**0.000116**	**0.0000655**	**0.00237**

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Yield is reported at 10% moisture. Oils adjusted for oleic acid content.

2017 South Dakota Sunflower Hybrid Trial Results

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Sunflower production is greatly affected by choice of hybrid. When selecting a hybrid, consider characteristics such as yield potential, oil content, and disease resistance.

Yield

For yield, consider information from performance trials close to your production area. Performance averaged over many tests (locations and years) is called "yield stability". A good yield stability means that, while a hybrid may or may not be the best yielder at all locations, it ranks high in yielding potential at many locations/years. A hybrid that ranks in the upper 20% at all locations exhibits better yield stability than one that is the top yielder at two locations but ranks in the lower 40% at two other locations. To determine if one hybrid is better than another for a given trait in the tables that follow, use the least significant difference (LSD 5%) value at the bottom of each data column. The LSD 5% value is a statistical method of indicating if a trait, like yield, differs when comparing two hybrids. If two hybrids differ by more than the indicated LSD value for a given trait, they would most likely differ again when grown under similar conditions. It is unlikely that environmental conditions of any particular test will be repeated in any future year.

Oil Content and Composition

Among similar-yielding oilseed hybrids, select the one with the highest oil content. The oilseed crushing market pays a premium for over 40% oil (at 10% moisture) and discounts for less than 40% oil. Another factor to consider is the oil type. Hybrids are available with 'traditional' (linoleic), high-oleic, and midoleic (NuSun) oil composition. Markets may pay a premium based on the composition of the oil produced by a particular hybrid. Some companies offer guarantees for NuSun or high oleic levels.

Maturity

Maturity is especially important if planting is delayed. Yield, and oil content are often reduced when a hybrid is damaged by frost before it is fully mature. Often, with delayed planting, only an early hybrid will mature and exhibit its full yield potential. An early hybrid will likely be drier at harvest than a later hybrid, thus reducing drying costs.

Moisture Content

Harvesting sunflower at moisture contents as high as 20-25% may reduce bird damage and seed shattering loss during harvest. For storage, seed must be dried to 9.5% or less.

Disease, Insect, and Herbicide Resistance

The most economical and effective means of managing sunflower diseases and other pests is the planting of resistant or tolerant hybrids and a minimum of four years rotation between successive sunflower crops. Most commercial sunflower hybrids in the United States have resistance to downy mildew and rust. Some hybrids may also exhibit tolerance to Phomopsis stem canker, or sunflower midge. Clearfield® and ExpressSun™ hybrids are resistant to Beyond® and Express® herbicides, respectively. Consult the seed company for information on the reaction of a particular hybrid to diseases and other pests that may pose risks in your growing area.

Other Factors

Consider your contracting and marketing opportunities when selecting hybrids. Some hybrids may fit more than one market. For example, many oilseed hybrids may be equally suitable for crushing, hulling, or birdfeed.

Locations and Hybrids

In 2017, oilseed hybrid sunflower trials were planted at five locations in South Dakota (Haakon, Lantry, Volga, Onida, and Presho). Entries in the oilseed sunflower trials for the five locations included traditional linoleic oil hybrids, NuSun (mid-oleic) hybrids, high oleic, and ConOil hybrids. Non-oilseed (confection) sunflower trials were conducted only at Haakon and Onida. Test locations are indicated on the map in Figure 1. Lists of the hybrids tested in 2017 appear in Tables 1 and 2.

Experimental Methods

Plots at all locations consisted of four rows 30 feet long, with a 30 inch row spacing. The plot layout was in a randomized complete block design with four replications at each location. Seed of the hybrids entered in the trials was pre-treated with Cruiser insecticide and at least one fungicide. All trials were seeded no-till except in Volga where conventional-till was followed. Seeding dates were June 14, 2017 for Presho and Haakon, June 15, 2017 for Onida and Lantry, and June 19, 2017 for Volga. The previous crop at all locations was corn. Plots were seeded to approximately 18,000 plants/acre. Stands were good at all locations for both oilseed and confection trials.

Days to flowering and Plant Height was taken at all locations before harvest. The center two rows of each 4-row plot at all locations were harvested with a Kincaid 8-XP plot combine fitted with a two-row all row crop header and HarvestMaster High Capacity GrainGage HM-800 HarvestData System. Seed yields were adjusted to a 10% moisture basis. A seed sample was collected from each plot. Oil content of oilseed hybrids was determined by NMR analysis, using a Bruker minispec. Oil values for NuSun and high oleic hybrids were adjusted for oleic acid content.

Weather

A summary of weather conditions near the sunflower test sites is presented in Table 3. In general, the 2017 growing season was generally warmer at all locations. The locations also experienced average to below average precipitation throughout the entire growing season (Table 3). The first killing frost (<26°F) occurred between late October and early November at all locations.

Results

Data from each location are contained in Tables 4-7.

Lodging was not observed in any locations (except Volga because of Phomopsis stem canker).

Days to flowering was not performed separately for the hybrids in Onida, but across all hybrids, flowering was observed on August 21, 2017.

Presentation of data in this report on the hybrids tested does not imply approval or endorsement by SDSU to the exclusion of other varieties that may be suitable. South Dakota State University approves the reproduction of any table in this publication only if no portion is deleted.

List of Tables

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2017.

Company/Brand	Hybrid	Hybrid Traits1	Location				
			Volga	Lantry	Haakon	Onida	Presho
Pioneer	P64ME01	NS,EX,DM	x		x	x	x
Pioneer	P63HE90	NS,EX,DM	x		x	x	x
NuSeed	Hornet	HO,CL, DM	x	x	x	x	x
NuSeed	N4HM354	NS, CL, DM	x	x	x	x	x
NuSeed	Falcon	NS, EX	x	x	x	x	x
NuSeed	Camaro II	NS, CL, DM	x	x	x	x	x
NuSeed	N5LM307	NS, CL, DM, Conoil	x	x	x	x	x
NuSeed	Badger DMR	NS, CL, DM, Conoil	x	x	x	x	x
NuSeed	Talon	NS, EX		x	x	x	x
NuSeed	N4HP470	HO, CLP, DM		x			x
NuSeed	N4HM340	HO, CL, DM		x			x
NuSeed	NHKM30047DM	HO, CL, DM		x			x
NuSeed	NHK12S111	HO, EX		x			x
NuSeed	N4HM521	HO, CL, DM		x			x
Mycogen	MY8H456CL	HO, CL, DM	x	x	x	x	x
Mycogen	8H449CLDM	HO, CL, DM	x	x	x	x	x
Mycogen	8D310CLDM	ConOil, CL		x		x	x
Mycogen	MY8H270CL	HO, CL, DM		x		x	
Mycogen	E76437	HO, CL, DM	x	x	x	x	x
ProSeed	E-21 CL	NS, HO, CL	x	x	x	x	x
ProSeed	E-31 CL	NS, HO, CL	x	x	x	x	x
ProSeed	E-362436	NS, HO	x	x	x	x	x
ProSeed	12G25 CL	NS, HO, CL	x	x	x	x	x
ProSeed	E-53051 CL	NS, CL	x	x	x	x	x
ProSeed	E-71 CL	NS, CL	x	x	x	x	x
ProSeed	E-72	NS	x	x	x	x	x
ProSeed	E-73 CL	NS, CL	x	x	x	x	x
DynaGrow	XH71H11CL	HO, CL		x		x	
DynaGrow	XH71H27CL	HO, CL		x		x	
DynaGrow	XH71N33CL	NS, CL		x		x	
DynaGrow	XH71N44CL	NS, CL		x		x	
DynaGrow	XH72H22CL	HO, CL				x	
DynaGrow	XH72H38CL	HO, CL				x	
DynaGrow	XH72H61CL	HO, CL		x		x	
DynaGrow	XH72H47CL	HO, CL		x		x	

Table 1. Oilseed sunflower hybrids and locations where tested in South Dakota - 2017.

Company/Brand	Hybrid	Hybrid Traits1	Location				
			Volga	Lantry	Haakon	Onida	Presho
DynaGrow	XH72N54CP	HO, CP		x		x	
DynaGrow	XH73H14CL	HO, CL				x	
DynaGrow	XH73H32CL	HO, CL				x	
Croplan	3732	NS		x		x	x
Croplan	3845 HO	HO		x		x	x
Croplan	545 CL	NS, CL, DMR		x		x	x
Croplan	549 CL	NS, CL, DMR		x		x	x
Croplan	568 CL HO	HO, CL, DMR		x		x	x
Croplan	7717 CL HO	HO, CL, DMR		x		x	x
Croplan	7919 CL HO	HO, CL, DMR		x		x	x
Croplan	432 E	NS, EX, DMR		x		x	x
Croplan	450 E HO	HO, EX, DMR		x		x	x
Croplan	455 E HO	HO, EX, DMR		x		x	x
Croplan	458 E HO	HO, EX, DMR		x		x	x
ThunderSeed	12N92	NS, CL, DM	x	x	x	x	x
ThunderSeed	11N94	NS, CL, DM	x	x	x	x	x
ThunderSeed	35H92	NS, CL, DM	x	x	x	x	x
ThunderSeed	42H94	NS, CL, DM	x	x	x	x	x
AgVenture Pinnacle	AF3N692ES	NS, EX, DM		x	x	x	x
AgVenture Pinnacle	XF4N08CD	NS, CL, DM		x	x	x	x
AgVenture Pinnacle	AF3H681ES	HO, EX, DM		x	x	x	x
AgVenture Pinnacle	AF3N94CD	NS, CL, DM		x	x	x	x
AgVenture Pinnacle	AF4H95CD	HO, CL, DM		x	x	x	x
AgVenture Pinnacle	XF2N14CD	NS,CL,DM		x	x	x	x
Sunopta	4415HO/CLP/DM	HO, CLP, DM		x		x	x
Sunopta	4421CL	CL, Conoil		x		x	x
Sunopta	4425CL	CL, Conoil		x		x	x
USDA	894		x	x	x	x	x

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 2. Confection sunflower hybrids tested in South Dakota - 2017.

Company/Brand	Hybrid	Hybrid Traits1	Location	
			Haakon	Onida
Argensons	Valia 41		x	x
CHS	RH609CLP		x	x
CHS	15EXP02		x	x
CHS	17EXP02		x	x
CHS	17EXP03		x	x
NuSeed	Panther DMR	DM	x	x
NuSeed	NSKM53777	CL	x	x
NuSeed	4334	CL	x	x
Red River Commodities	2215	Traditional	x	x
Red River Commodities	2215 CL	CL	x	x
Red River Commodities	2217 CP	CP	x	x
Red River Commodities	2310	Traditional	x	x
Sunopta	9510			x
Sunopta	9553			x
Sunopta	9524			x
Sunopta	9549			x
Sunopta	9590			x

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

Table 3. Weather data from sites closest to 2017 South Dakota sunflower test plot locations and departures from normal.

	2017 Temperature			Total
Location-	Avg Max.	Avg Min.	Mean	Precip
Month	----------(°F)----------			(in.)
Presho/Haakon-Cottonwood station				
May	71.0	41.1	57.2	1.1
June	84.5	52.5	69.6	2.46
July	94.9	61.9	78.8	1.32
August	85.9	51.8	69.1	0.37
September	78.6	46.5	63.1	1.1
October	64.2	31.1	48.0	0.75
Onida/Lantry-Gettysburg Station				
May	69.3	42.9	56.6	0.81
June	80.9	54.0	67.7	1.87
July	89.3	60.4	74.6	2.97
August	76.7	54.7	65.0	4.43
September	73.1	48.9	60.3	1.68
October	59.5	34.7	46.6	0.79
Volga				
May	68.2	43.6	56.2	3.3
June	80.8	53.7	68.5	1.71
July	84.2	58.2	72.0	3.68
August	75.0	52.6	64.0	4.24
September	73.0	49.3	60.9	4.18
October	59.6	34.1	47.1	2.19

*Weather observations are from sites as close to the actual 2017 test plot sites as available. Temperature and/or precipitation at the actual test plot sites may have differed from the values shown above.

Table 4. 2017 - Sunflower - Oilseed - Onida, SD

Company/Brand	Hybrid	Hybrid Traits[1]	Oil Content (%)	Harv. Yield2 (lb/A)	Plant Height (In.)
Pioneer	P64ME01	NS,EX,DM	46.7	2264.7	59.3
Pioneer	P63HE90	NS,EX,DM	46.6	2527.8	63.0
NuSeed	Hornet	HO,CL, DM	48.0	2427.9	54.3
NuSeed	N4HM354	NS, CL, DM	46.4	2228.5	48.5
NuSeed	Falcon	NS, EX	45.7	2670.2	55.3
NuSeed	Camaro II	NS, CL, DM	45.6	1982.0	52.5
NuSeed	N5LM307	NS, CL, DM, Conoil	44.0	2407.9	57.0
NuSeed	Badger DMR	NS, CL, DM, Conoil	42.3	2751.7	60.0
NuSeed	Talon	NS, EX	44.1	2040.4	54.3
Mycogen	MY8H456CL	HO, CL, DM	48.6	2297.8	57.0
Mycogen	8H449CLDM	HO, CL, DM	49.1	2539.7	55.5
Mycogen	8D310CLDM	ConOil, CL	44.0	1799.6	57.0
Mycogen	MY8H270CL	HO, CL, DM	47.6	2557.3	55.3
Mycogen	E76437	HO, CL, DM	46.8	2250.9	62.0
ProSeed	E-21 CL	NS, HO, CL	42.9	2189.1	67.3
ProSeed	E-31 CL	NS, HO, CL	45.8	2298.1	55.8
ProSeed	E-362436	NS, HO	46.7	2307.4	69.3
ProSeed	12G25 CL	NS, HO, CL	49.8	2575.5	60.3
ProSeed	E-53051 CL	NS, CL	45.8	2231.1	56.5
ProSeed	E-71 CL	NS, CL	43.8	2158.7	59.0
ProSeed	E-72	NS	47.2	2045.0	67.5
ProSeed	E-73 CL	NS, CL	45.1	2064.6	60.0
DynaGrow	XH71H11CL	HO, CL	46.8	2601.4	43.8
DynaGrow	XH71H27CL	HO, CL	48.5	2782.2	56.8
DynaGrow	XH71N33CL	NS, CL	47.4	2613.6	52.5
DynaGrow	XH71N44CL	NS, CL	46.7	2743.8	53.8
DynaGrow	XH72H22CL	HO, CL	46.1	2222.9	53.8
DynaGrow	XH72H38CL	HO, CL	45.9	1943.0	59.3
DynaGrow	XH72H61CL	HO, CL	47.0	1730.8	43.0
DynaGrow	XH72H47CL	HO, CL	48.7	2479.4	62.5
DynaGrow	XH72N54CP	HO, CP	51.1	2567.0	60.0
DynaGrow	XH73H14CL	HO, CL	45.4	2151.8	56.5
DynaGrow	XH73H32CL	HO, CL	45.9	2071.8	61.3

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Yield is reported at 10% moisture.

Table 4. 2017 - Sunflower - Oilseed - Onida, SD

Company/Brand	Hybrid	Hybrid Traits1	Oil Content (%)	Harv. Yield2 (lb/A)	Plant Height (In.)
Croplan	3732	NS	47.3	2246.2	51.3
Croplan	3845 HO	HO	46.6	2370.8	49.5
Croplan	545 CL	NS, CL, DMR	44.9	2021.9	54.3
Croplan	549 CL	NS, CL, DMR	45.0	2717.2	61.5
Croplan	568 CL HO	HO, CL, DMR	43.0	2280.0	57.0
Croplan	7717 CL HO	HO, CL, DMR	47.8	2486.8	53.3
Croplan	7919 CL HO	HO, CL, DMR	49.2	2604.7	56.3
Croplan	432 E	NS, EX, DMR	44.9	2140.7	57.3
Croplan	450 E HO	HO, EX, DMR	46.2	2145.8	59.8
Croplan	455 E HO	HO, EX, DMR	43.8	2366.4	60.0
Croplan	458 E HO	HO, EX, DMR	47.1	2628.8	60.8
ThunderSeed	12N92	NS, CL, DM	47.6	2862.9	61.0
ThunderSeed	11N94	NS, CL, DM	45.5	2393.2	59.3
ThunderSeed	35H92	NS, CL, DM	46.5	2305.0	46.5
ThunderSeed	42H94	NS, CL, DM	47.9	2454.1	40.8
AgVenture Pinnacle	AF3N692ES	NS, EX, DM	48.1	2529.5	65.3
AgVenture Pinnacle	XF4N08CD	NS, CL, DM	44.6	2027.1	55.5
AgVenture Pinnacle	AF3H681ES	HO, EX, DM	44.9	2140.6	53.8
AgVenture Pinnacle	AF3N94CD	NS, CL, DM	46.6	1914.3	55.0
AgVenture Pinnacle	AF4H95CD	HO, CL, DM	48.9	2941.1	54.0
AgVenture Pinnacle	XF2N14CD	NS,CL.DM	46.5	2676.2	54.8
Sunopta	4415HO/CLP/DM	HO, CLP, DM	45.2	2590.8	55.3
Sunopta	4421CL	CL, Conoil	49.3	2684.1	58.5
Sunopta	4425CL	CL, Conoil	43.6	2508.5	58.5
USDA	894		45.0	2312.5	54.8
P @ .05			**0.01**	**0.01**	**0.001**
LSD @ .05			**4.2**	**592.2**	**10.9**
CV			**5.8**	**18.0**	**13.8**

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
[2]Yield is reported at 10% moisture.

Table 5. 2017 - Sunflower - Oilseed - Haakon, SD

Company/Brand	Hybrid	Hybrid Traits1	Oil Content (%)	Harv. Yield2 (lb/A)	Plant Height (in.)
Pioneer	P64ME01	NS,EX,DM	45.4	2094.8	48.3
Pioneer	P63HE90	NS,EX,DM	45.0	2026.4	55.0
NuSeed	Hornet	HO,CL, DM	48.0	1988.0	51.0
NuSeed	N4HM354	NS, CL, DM	46.2	1735.5	41.8
NuSeed	Falcon	NS, EX	45.3	2106.3	49.5
NuSeed	Camaro II	NS, CL, DM	45.1	2076.9	44.5
NuSeed	N5LM307	NS, CL, DM, Conoil	41.7	1858.7	44.0
NuSeed	Badger DMR	NS, CL, DM, Conoil	38.8	1894.8	53.0
NuSeed	Talon	NS, EX	43.5	1554.1	47.5
Mycogen	MY8H456CL	HO, CL, DM	48.5	1527.6	45.3
Mycogen	8H449CLDM	HO, CL, DM	49.3	1801.3	34.0
Mycogen	E76437	HO, CL, DM	46.3	1597.7	52.3
ProSeed	E-21 CL	NS, HO, CL	41.0	1993.7	52.8
ProSeed	E-31 CL	NS, HO, CL	43.7	1942.4	50.3
ProSeed	E-362436	NS, HO	45.5	2213.9	51.8
ProSeed	12G25 CL	NS, HO, CL	48.8	1647.9	48.0
ProSeed	E-53051 CL	NS, CL	45.2	1608.4	49.5
ProSeed	E-71 CL	NS, CL	43.7	2182.3	48.3
ProSeed	E-72	NS	47.6	1953.3	52.0
ProSeed	E-73 CL	NS, CL	42.8	1683.9	51.3
ThunderSeed	12N92	NS, CL, DM	45.7	1914.0	42.0
ThunderSeed	11N94	NS, CL, DM	45.8	1724.4	49.3
ThunderSeed	35H92	NS, CL, DM	44.5	2103.3	41.8
ThunderSeed	42H94	NS, CL, DM	47.9	2114.7	45.0
AgVenture Pinnacle	AF3N692ES	NS, EX, DM	46.9	1984.3	52.8
AgVenture Pinnacle	XF4N08CD	NS, CL, DM	46.7	2185.5	42.0
AgVenture Pinnacle	AF3H681ES	HO, EX, DM	44.8	2017.5	40.3
AgVenture Pinnacle	AF3N94CD	NS, CL, DM	44.6	1972.6	48.5
AgVenture Pinnacle	AF4H95CD	HO, CL, DM	46.8	1858.7	44.5
AgVenture Pinnacle	XF2N14CD	NS,CL.DM	46.5	1701.8	41.3
USDA	894		44.0	1701.8	42.0
P @ .05			**0.001**	**> 0.05**	**0.01**
LSD @ .05			**2.7**	**1021.6**	**9.9**
CV			**3.8**	**18.9**	**14.9**

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.
[2]Yield is reported at 10% moisture.

Table 6. 2017 - Sunflower - Confection - Onida, SD

Company/Brand	Hybrid	Hybrid Traits[1]	Harv. Yield[2] (lb/A)	Plant Height (In.)
NuSeed	Panther DMR	DM	3076.4	55.3
NuSeed	NSKM53777	CL	2734.6	61.0
NuSeed	4334	CL	2593.1	62.7
Argensons	Valia 41		2934.4	56.3
Red River Commodities	2215	Traditional	2530.4	59.7
Red River Commodities	2215 CL	CL	3389.3	62.0
Red River Commodities	2217 CP	CP	2784.0	54.3
Red River Commodities	2310	Traditional	2486.0	73.3
Sunopta	9510		2708.3	67.3
Sunopta	9553		3025.9	62.7
Sunopta	9524		2984.8	60.0
Sunopta	9549		3087.2	58.0
Sunopta	9590		3078.4	50.7
CHS	RH609CLP		2843.6	64.0
CHS	15EXP02		2103.5	66.3
CHS	17EXP02		2410.7	54.0
CHS	17EXP03		2066.7	54.0
USDA	954		2235.8	64.0
P @ .05			**> 0.05**	**0.5**
LSD @ .05			**1833.1**	**10.4**
CV			**20.5**	**10.3**

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Yield is reported at 10% moisture.

Table 7. 2017 - Sunflower - Confection - Haakon, SD

Company/Brand	Hybrid	Hybrid Traits[1]	Harv. Yield[2] (lb/A)	Plant Height (In.)
NuSeed	Panther DMR	DM	1565.5	41.9
NuSeed	NSKM53777	CL	2153.8	53.0
NuSeed	4334	CL	1039.8	52.0
Argensons	Valia 41		1495.0	52.3
Red River Commodities	2215	Traditional	1822.8	53.0
Red River Commodities	2215 CL	CL	1459.2	52.3
Red River Commodities	2217 CP	CP	1698.4	46.0
Red River Commodities	2310	Traditional	1758.1	53.7
CHS	RH609CLP		2181.6	55.7
CHS	15EXP02		1799.5	62.7
CHS	17EXP02		1498.3	50.7
CHS	17EXP03		1256.7	47.3
USDA	954		1529.4	44.0
P @ .05			**0.05**	**< 0.05**
LSD @ .05			**608.0**	**8.4**
CV			**22.1**	**9.7**

[1]Traits: HO = High Oleic, NS = NuSun, Trad = Traditional (linoleic), CL = Clearfield, EX = ExpressSun, DM = Downy Mildew Resistant, SS=Short Stature, HS = High Stearic.

[2]Yield is reported at 10% moisture.